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Purbeck Marble and Stone.

THE Isle of Purbeck has been celebrated from time immemorial for the character and beauty of the stone raised within its narrow confines. It is not so well known, perhaps, as it might be, owing chiefly to the circumstance that the attention of quarry-owners in the district is rightly centred in the products of the neighbouring Isle of Portland. Yet this is very far from having always been the case. Long before Portland had begun to rise to the high position it now occupies as a stone-producing island, the stone from Purbeck was, as is very well known, held in high esteem, amongst builders of the Middle Ages especially. The slender shafts and columns, the sepulchral monuments and interior decorations of a like nature, found in many cathedral and other churches in the South of England, all testify to its abundant use from the eleventh to the sixteenth centuries. It was mostly used during that period in a polished state, being known as Purbeck marble. A certain proportion of the shafts in Westminster Abbey are constructed of this material; but, unfortunately, the stone is in a bad state of preservation, having hardly a trace of the original polished surface left. Portions of the Temple Church; the shafts in Lincoln Cathedral; the tomb of William Rufus in Winchester Cathedral; the tombs of Bishop Roger de Mortival and Bishop Poore, the shafts and mouldings of the magnificent new pulpit designed by the late Sir Gilbert Scott, and many minor embellishments in Salisbury Cathedral, are amongst the fine examples of work executed in this marble.

There can be but little doubt, however, that Purbeck is often confounded with the Sussex or Petworth marble. Some of the varieties of this latter so closely resemble the former, that the mistake is quite excusable. It may not be uninteresting, therefore, to briefly describe the salient features of either kind. They are both shelly limestones, nearly the whole of the substance of which they are made being formed of the shells of minute crustaceæ, but principally also of the fresh-water gastropod known as *Paludina*. This, no less than the collateral evidence afforded by the physical character of the beds in which the seams of stone are found, proves that they have both been laid down, or formed, in fresh water. The slabs of stone, after being polished, exhibit the *Paludinæ* cut through in different directions, and this gives a pleasing "pattern" to the marble. The shells are frequently decomposed, their casts alone remaining, the interstices being filled up with calcareous matter. In the coarser varieties, cavities are left by the decomposition and total removal of the shells; but in the compact and more commonly used kinds, the shells are changed into crystalline calcite, and the whole has been permeated and cemented by the same mineral, also in a crystalline form, giving it that degree of hardness by which alone it is rendered capable of receiving a polish. So much for the characters possessed by the stones in common.

The chief distinguishing features are, the different species of *Paludinæ*, and the tints of the stones; though this latter is only of secondary importance. It is commonly thought that the two kinds of marble may be distinguished from each other in that the species of *Paludina* characterising the Sussex stone is much larger than that of the Purbeck. This is very well in a general sense, but it by no means always applies. The Purbeck *Paludinæ* are, without exception, comparatively small species, those in the commonest kind of marble being especially so; whereas the Sussex marble *Paludinæ* are at least of three distinct kinds, two of which (*P. Sussexensis* and *P. fluviorum*) are large, and the other rather small, or about the same size as those common to the Purbeck. We are referring now only to those species of *Paludinæ* which are important as rock-formers, and which, therefore, materially assist in making up the stone. That kind of Sussex marble formed of the smaller species of *Paludinæ* is seen at Staplehurst, Frittenden, Idenbourn, and Crowhurst; whilst the others, containing the larger species, are met with near Plaistow and south-east of Chiddingfold, and at Bethersden, Petworth, &c., respectively. The last mentioned is the best-known kind of Sussex marble, and, like the Purbeck, is renowned in the annals and history of church architecture. From the foregoing, it will be seen that the only variety of Sussex marble that can possibly be confounded with the Purbeck, is that along the horizon found at Staplehurst, &c.; and in this case the difference in tint somewhat assists, being of a greenish hue. So far as we can learn, it is never pink, like some varieties of the Purbeck. Moreover, the species of *Paludinæ* and *cypridea* are different.

Comparatively speaking, the Purbeck marble is not of any importance now-a-days. The stone is polished locally, we are informed; but, from the fact that so much of it weathers badly, and from the competitive influence of the introduction of more highly crystalline home and foreign marbles into the market, its use has very much decreased. As with limestones of this class, however, good and durable beds, capable of being polished, exist. The value of the marble lies principally in its historic associations.

But it is not so much of Purbeck marble as of the stone raised in the island, and used for ordinary building purposes, that we desire now to treat of.

As the visitor approaches Swanage from the sea, the most prominent objects striking his eye are huge stacks of stone piled up in yards, not far from the landing-place. The sound of the hammers and chisels striking the refractory substance, and ringing through the air, bespeak of an industry by no means extinct. Carts laden with the heavy material, drawn by horses, may be seen slowly winding along the roads in the vicinity. We observe that many of the inhabitants are masons; that the "Mowlem Institute" is a well-known establishment; whilst the name of Burt is quite familiar. From these indications we may infer that the stone trade, in spite of the comparative extinction of the marble trade, is yet the principal industry of the place. In most stone-working districts, the quarries whence the material comes are conspicuous, but at Swanage, we only see the hill-sides to the south of the town dotted all over with sheds and small heaps of rubbish. No really large quarries are anywhere to be seen in the vicinity. On ascending the hill-slopes, we find that the stone is obtained by mining, and that the sheds mark the entrances to the mines. We will now briefly describe one of these workings, which may serve as a general guide to the whole.

The entrance to the mine is down an inclined plane at an angle of about 45 deg., the uppermost thirty feet being open, and the remaining portion being tunnelled through the earth to a depth of 100 ft. from the surface. Steps are cut on one side of the track to allow the workmen to descend and ascend. The stone is hauled up the inclined plane on trolleys (after being securely fastened thereto), by means of a chain working on rollers and

wound round a capstan at the surface, the latter being worked by a horse.

There are at least five beds of good workable stone at Swanage:—

1. Is known as the "Leaning vein," is 4 ft. to 5 ft. thick, being used principally for curbs, &c. It is a hard, compact, dark-grey, shelly limestone, breaking with a splintery fracture, and seems well adapted to curbing and pitching in towns, where there is not much ordinary traffic. A few cavities exist in the stone, which render it incapable of resisting much heavy wear.

2. Is a white freestone, about 6 ft. to 8 ft. in thickness, largely employed for building in the neighbourhood. It is very hard, full of shells, and altogether a serviceable-looking material for ashlar, &c. The poorer kinds weather into cavities, and, consequently, are not of much permanent value.

3. Known as "Down's vein," from 3 ft. to 3½ ft. thick, is used for paving, &c. It is of a light brown colour, is fine-grained and flaggy.

4 and 5 are separated from each other only by a foot of earth. They are termed the "cap and feathers" beds, having a total thickness of about 9 ft. The structure of both is practically the same, being medium-grained, bluish grey, shelly limestones, exceedingly hard and compact, and, although they somewhat resemble No. 1 in texture, they do not seem to contain any cavities. They are peculiarly fitted for country pitching and curbing.

As is usually the case with strata laid down in fresh water, or in estuaries, the beds of Purbeck stone vary considerably in thickness,—in some places bulging out, and in others, becoming much attenuated or altogether disappearing. The thicknesses given, therefore, must be taken in a general sense only. From this, and from the circumstance that the beds of stone are naturally so thin, and are usually separated from each other by considerable thicknesses of earth (which it would not pay to remove), the men have to work in a stooping posture. The stone is detached from the parent rock by means of wedges, no explosives of any kind being used, except in making new openings.

The underground drainage is fairly good, because, as a rule, the beds gently incline to the northwards, and there is consequently a natural fall. We are now more particularly referring to the mines quite close to Swanage; farther southwards, these Purbeck beds are considerably twisted and contorted, when such favourable conditions do not often obtain.

We were informed that at least 300 men and boys were employed in "winning" stone round Swanage, Durlestone, and Langton. Very few stone merchants work the mines themselves. The thinness of the stone prevents anything like concentrated labour; and steam machinery is quite out of the question, as the mines, although in the aggregate important enough, are too far apart to permit of its being economically introduced. The mines are conducted by small gangs of men and boys, who mostly work on their own account, and sell the ashlar, curbing, pitching, paving, and roofing to the stone merchants. The state of trade is not very promising, and is certainly not so brisk as it might be,—the universal cry. Swanage Bay, which serves as a harbour to the place, affords good anchorage for vessels of from 300 to 400 tons burthen, and stone can be easily shipped alongside the wooden pier.

The roofs of the older houses in the town are covered with thin slabs of stone (made from the more flaggy varieties of the material), which time has covered with moss, and this imparts a quaint and picturesque appearance to the place. The freestone is not at all adapted to outside carving, as may be seen in the public buildings. The weather causes the shelly infiltrations to wear out into cavities, which naturally has the effect of giving the stone a pitted and freckled appearance. In one case, which came under our notice, where there are carvings representing two children over a large doorway, the effect of this weathering is most unpleasing. The better kinds of Purbeck freestone are good materials to build with, as we have before remarked; but their use is altogether misapplied in any kind of outside carvings or rich embellishments. The more homogeneous varieties of stone only, must be utilised for these purposes.

It is very necessary to build Purbeck stone so that the bedding is either horizontal, or placed in such a position as to prevent the fissile limestone from flaking off from the surface of the building. This materially adds to its durability.

THE NEW GERMAN TRADE INSURANCE LAWS.

THERE can be no question that the Foreign Office is doing good service by their publication, at a cheap rate and in convenient form, of reports on subjects of general and commercial interest. But the Office might, we think, take measures for the circulation of these reports. They should be sold at railway bookstalls and at booksellers' shops, and should be advertised so that the public generally might have their attention called to them. We wonder how many farmers have even heard of the Report on Dairy Farms in Denmark.

The Report No. 107, upon which we propose to say something, is not fully explained by its title, because the actual law there translated is preceded by an introduction by Mr. Rennell Rodd, in which he gives an interesting account of the other laws relating to the insurance of working men in Germany. The experiment which is now being tried there is of as much interest to us as to the Germans. It is, says Sir Edward Malet in his covering letter to Lord Salisbury, "a social experiment on a vast scale, which, if it succeeds, will form the most enduring title of the late Emperor William and Prince Bismarck to the gratitude of their countrymen." Let us see what this "vast experiment" is. In 1883 the first law on the subject was passed, by which working men were compelled to insure against sickness and accident. Parenthetically, we may say that it would be of value if a translation of this law were obtainable in this country, since we are unable to gather from Mr. Rodd's statement to what trades this compulsory insurance by workmen is confined. According to the first report of the Imperial Insurance Office (for 1886), nearly three and a half million workmen were insured, and about £85,000 had been paid in indemnities. Under the Sickness Insurance Law, the relief ceases at the end of thirteen weeks. The main point to notice about this law, however, is that it is a compulsory insurance law, under which, whether he likes it or not, the workman has to put by money against a rainy day. On July 6, 1884, was passed the Accident Insurance Law; by this the compulsory obligation rests on the employer to make provision (in certain trades) against the chance of workmen being injured in their calling. In 1885, the law was considerably extended, so as to cover a much larger class of workmen, and those engaged under the State. In 1887 was passed the law applicable to sailors, of which Mr. Rodd gives a translation—"The insurance of the working-man against old age, and the making provision for his latter years, will be the final development of this principle." To a certain extent the sickness and the accident laws work in with one another, because the relief under the latter does not begin till the thirteen weeks under the former law, to which we have already alluded, have expired. The sickness law is therefore also a limited accident insurance law. In order to work the accident law "the employers throughout the country are grouped together in co-operative associations, according to their respective employments and territorial distribution." These may really be called "companies," for they act much like a limited company in this country. They draw up their own rules, and manage their own finances. These associations, again, can be divided into sections, which are governed by a board, as is the general association. But above all these is the Imperial Insurance Office, brought into existence for the purpose of these new laws. It is thus more particularly described by Mr. Rodd:—

"It has its seat at Berlin, and is composed of, at least, three permanent members, including the President, and eight non-permanent members. The President and other permanent members are nominated for life by the Emperor at the instance of the Federal Council. Of the eight non-permanent members four are elected by the Federal Council from its own members; two are elected by the Governing Boards of the Associations; and two by the representatives of the class insured (the representatives at the Arbitration Courts), at a special election, held under the directions of the Imperial Insurance Office. A first and second substitute is also to be elected for these and for the members elected by the Board. The office of non-permanent members lasts four years. Other functionaries in the Imperial Insurance Office are nominated by the Imperial Chancellor."

It "initiates the organisation of the associations, supervises the administration, approves their statutes, breaks up associations that have become unmanageable, undertakes the management previous to the election of officers, and acts as a final Court of Appeal in disputed settlements between employers and employed." It is, in fact, the embodiment of parental, or State, power over nominally self-governing bodies.

The sums required for paying indemnities are obtained by an annual assessment of the members, "the share of each being determined by the number of persons they employ, but subject to augmentation if the occupation is of a specially dangerous character." There are also Courts of Arbitration,—at least one for every section. They consist of "a president selected from the official class," and certain representatives elected by employers and employed. The indemnities are paid by orders on the local post-offices.

Incidentally connected with the general scheme are regulations drawn up for the prevention of accidents. These are composed by the associations after consultation with representatives of the workmen, and they must receive the approval of the Imperial Insurance Office.

We have thus, without going into detail, given a general outline of the new insurance laws of Germany, framed with the object of preventing working-men from becoming paupers through sickness or through accident. At present the system has not been long enough at work to enable a just estimate to be made of its permanent value, which, indeed, will be more fully seen when its further development takes place. Nor have we information before us as to the extent, if any, to which the rate of wages is affected in consequence of this legislation. It is primarily the duty of the workman to lay by money to keep himself alive after an accident. We should take it that if the employer has to find the money the rate of wages would become lower. There are various smaller points also upon which we have no doubt information will be received, such as the effect of illness produced by insobriety. Does such an illness entitle a workman to relief? But it is certain that if the experiment proves successful it will probably,—though in a less complicated form,—be adopted at some future time in this country, and may be the means of solving,—partially at any rate,—one of the most important social problems of our age.

Manchester Society of Architects.—The annual dinner of the Manchester Society of Architects took place on Thursday evening, the 8th inst., at the Queen's Hotel. The guests present were Mr. Waterhouse, R.A., President of the Royal Institute of British Architects; Mr. Leader Williams, M. Inst. C.E.; Dr. Ransome, of the Sanitary Association; Mr. Kirby, A.R.I.B.A., President of the Liverpool Architectural Association; and Mr. Leresche, J.P. In the students' competition for the current year the President's prize of five guineas has been awarded to Mr. Stanley Davenport Adshead, who is engaged in the office of Mr. Medland Taylor. For the other prizes, amounting to fifteen guineas, there were no competitors.

NOTES.

THE "Interim Report" of the Royal Commission on the Board of Works, which will in all probability prove practically to be the only report (as it can hardly be worth while reporting again on a corporation so soon to become extinct), does not present anything of new or special interest in regard to the subject, as it merely puts into an official form the conclusions which every one who paid any attention to the evidence must have come to already. The severest condemnation of the Commissioners is, of course, directed against the most flagrant offenders, Goddard and Robertson. In regard to the two architect members of the Board, while the Commissioners strongly censure their conduct in certain cases (the substance of the evidence in regard to which has appeared in our columns), and while they "think it clear that the employment of Saunders as architect [to the London Pavilion] was forced upon Villiers, much against his will," they think it fair to Mr. Fowler and Mr. Saunders to say that "there is no evidence that in general the fact that they were professionally employed induced them to take, or abstain from taking, a course at the Board other than that which they would have pursued had they not been so employed." It was only for some comparatively small gains in some instances that these persons sacrificed what ought to have been their standard of professional honour and duty; and they have probably not found the result satisfactory. In regard to Mr. Hebb's theatrical transactions, the Commissioners use almost the very words we used, that they would have been disposed to pass over the matter lightly had not Mr. Hebb persisted in denying that he had done anything wrong. As it is, they "feel bound to express in unequivocal terms their sense of the impropriety of Mr. Hebb's conduct"; but they add that there is no evidence that he misused his position in any other way, and they entirely acquit him of any corrupt motives in regard to the matter of the line of frontage at Brixton Rise; an opinion in which we fully concur; it seems to have been an error of judgment, but nothing more. The most important conclusion come to by the Commissioners is that embodied in paragraph 94 of the Report, which we reprint verbatim:—

"In view of the facts elicited by this inquiry, we think it might have a wholesome effect if it were distinctly made a criminal offence to offer to any member or official of a public body any kind of payment, fee, or reward, having any relation to the affairs of the body of which he was such member or official, and also to make the person accepting any such payment, fee, or reward amenable to the criminal law. We are not, of course, professing to define the terms of such an enactment, or the exact form which it should take, nor the nature of the penalties to which the offenders should be made liable. But we think the provisions of the Corrupt Practices Acts would afford some useful suggestions in framing such an enactment."

WE regret to see that Mr. Perkin, the President of the Leeds and Yorkshire Architectural Society, in his opening address, has returned to the old fallacy of encouraging provincial societies to set themselves against the Institute, on the ground (this time) that the Institute considers that membership of its own body, obtained through the efficient compulsory examination to be now instituted, is a better and more suitable form of guarantee of professional proficiency than could be obtained by a diploma, and avoids the difficulties which would beset the granting of a diploma for a profession which is, to a great extent, an artistic one. The opinion on this subject of the present President of the Institute, a man universally respected both professionally and personally, ought certainly to have some weight, and ought to evoke some loyalty of support; but, instead of that, the first thing some people seem to think of is to do any thing that may be in their power to weaken his hands. As a member of the Institution of Civil Engineers remarked to us, in reference to the abortive Registration Bill, "It is the disunion of you architects that has caused all this trouble"; and the charge is only too true. Mr. Perkin argues that the influence of the Institute is too limited to guard the entrance to the profession from unqualified practitioners. It is not so limited, perhaps, as he thinks; and it is likely to become less so as the fact of its compulsory entrance examination becomes known to the public; but, so far as it is "limited," whose fault is that? Mainly the fault of those who refuse to act in concert with the central body. The adherence of all architects to a central representative body would enable that body to efficiently control the standard of professional attainment, as the Institution of Civil Engineers does actually control the standard of the engineering profession (even without an entrance examination), because the engineers are a loyal and united body among themselves, and the architects are not; and, so far as the influence of the Institute of Architects is limited, this is owing to the disloyal and disruptive policy of the very men who criticise its action.

WE give in another column a brief *résumé* of the evidence so far given as to the fall of the houses in Great Titchfield-street, by which six lives have been lost. The inquest is adjourned for some days. Pending this, we of course decline at present to express any opinion as to the probable cause of the accident, and where the blame is to be laid; though we have our own opinion on the subject, so far as we can judge from the ruins, and without having seen the plans.

THE case of Harding *v.* The Guardians of the City of London Union, which was tried last week before Mr. Justice Grantham, must not, we think, be taken to decide on principle that a building owner is entitled to retain the amount due to a quantity surveyor, and not to hand it over to the builder who claims it, in order to pay the quantity surveyor. In the case in question, the plaintiff claimed, as the trustee in bankruptcy of a builder, the balance due under a contract between the builder and the building owner to a quantity surveyor for his charges. The building owner had, in fact, paid his charges directly to the quantity surveyor, but it was argued that the builder, or, as in this case, his trustee, was entitled to obtain the money from the building owner, not necessarily to pay over to the surveyor, but to retain as part of his estate, the quantity surveyor claiming against it in the bankruptcy. Mr. Justice Grantham decided that the building owner was entitled under the circumstances to pay the quantity surveyor himself. We say that this case does not settle any principle, because it seems clear that the ground of the claim was for money primarily due to another person than the builder. At the most, the builder was no more than a trustee for the quantity surveyor, and so, if the latter had already received the money, there was clearly no equitable right in the builder or his trustee to claim the money on behalf of a man who had been already paid. If the building owner had not already paid the quantity surveyor, it seems possible that the trustee might have in that case claimed the money. Perhaps when the judgment is perused in full, it may throw more light on this interesting point.

THOSE of our readers who are interested in the Belgian Water-supply Competition,* may like to know that a communication has recently been made to the "Société Belge de Géologie" by M. Ch. Van Mierlo, on the water-supply of Ostend. He states that the water at present utilised in that city is rain collected in cisterns, and from artesian wells, neither of which is good or abundant. He reviews and criticises the three schemes which have been brought forward to give a better supply, which consist in (1) the filtration of the water of the Bruges Canal taken at Jabbeke, (2) the drainage of Wynendaele Hill near Thourout, and (3) the drainage of the dunes between Nieuport and La Panne. The first-mentioned project is somewhat like the method by which Antwerp is at present supplied. This city draws its water from the River Nethe, near Waelhem, the fluid passing through spongy-iron filters before being used. M. Van Mierlo, however, does not favour the Bruges Canal scheme for supplying Ostend, because chemical analyses have shown that the water in the canal, after being filtered, is unfit to drink. In regard to the second project mentioned, he points out that the conditions are favourable to efficient filtration, inasmuch as rain-water, in falling on the hills, passes through sand until it reaches the impermeable Paniselien clay underneath; but it is questionable whether the quantity required,—5,000 cubic mètres per day,—would be forthcoming, because the collecting ground is so limited. Besides, as long canals would have to be constructed, it would be too costly. The author thinks the third-mentioned scheme, that of obtaining the water from the dunes, is the most practicable. The sands of these dunes repose on clayey alluvium, which plays the *rôle* of an impermeable bed, holding up the rain-water which has passed through the overlying sands. The surface of the clay is slightly inclined, which causes a natural running of the water, which could be taken at its lowest levels by drainage tunnels in the usual way. The quantity of water obtainable by this method would be sufficient to supply both Nieuport and Ostend, and the abstraction of the water from its natural sources will not in any way affect the growth of plantations in the district. In regard to expense, he says that the last-mentioned project would give the best water, at the same price as the Bruges Canal scheme; whilst it gives more water at a lower price than would the drainage of Wynendaele Hill. We may mention that the cities of Amsterdam, Haarlem, Helder, Leyden, and the Hague are all supplied with water from sand-dunes after the manner projected for Ostend and Nieuport; but the thickness of the sand in Holland is greater than in Belgium, so that in the former country greater natural facilities exist for retaining water in the dunes,—an important consideration in a scheme of this kind.

* See the *Builder*, vol. iv., pp. 295-6 (April 28, 1888), and p. 318 *ante*.

IN the course of the Report of the Commission on the Board of Works, reference is made to the desirability of some provision being made for an appeal from the certificate of the Board's Architect fixing the line of building frontage, and a letter from Mr. Blashill is printed, proposing the appointment of a tribunal consisting of three architects or surveyors, of whom one should be appointed by the Institute of Architects, and one by the Institution of Surveyors. Mr. Blashill adds:—

"The selection of the third member of the tribunal remains to be considered. It is highly important that the Superintending Architect, whose experience in these cases will be constant and considerable, should be able to bring before the tribunal the principles upon which the definitions have been based. It is also important that he should be familiar with the views of the tribunal, as his definitions will be influenced by it in future cases. I, therefore, consider that he should be the third member of the tribunal, whose decisions should be made by the three members, or any two of them, as is laid down by section 85 of the Metropolitan Building Act, 1855, in the case of surveyors appointed to settle differences as to party walls."

The Commissioners entirely dissent from this suggestion of making the Superintending Architect a member of the tribunal of appeal from his own decision, and we are of the same mind. The tribunal of appeal could always hear and consider the statement of facts by the Superintending Architect. The appeal tribunal should be entirely independent of the official authority. This subject will probably have to be considered in some form when the direction of buildings in London is taken over by the County Council; and therefore it is important that the right principle of dealing with it should be considered. Mr. Blashill's letter contains also the following brief classification of the cases in

regard to frontage line, which have come up before the Board of Works (at the rate of about twenty-four a year), which may be of interest:—

"They arise as follows:—

1. Upon the request of an owner who desires to know the general line in reference to his intended building.
2. Upon the request of any neighbour who may consider his property injuriously affected by the proposed building.
3. Upon the request of a parish or local board, which request is usually made with the view of taking proceedings against the building owner.
4. Upon the request of the Metroplitan Board of Works made in cases when it considers that, without its intervention, buildings may be improperly erected."

THE talk of the hour in Italian parliamentary circles at Rome is the competition for the new Houses of Parliament for the Italian legislative body, for which designs have just been publicly invited. It was proposed some time ago to acquire the Palazzo Chigi, in the Piazza Colonna, for the purpose; but the site has now been definitely fixed in the Via Nazionale, in the Piazza Magna Napoli, not far from Trajan's Forum. The competition for the proposed buildings is open only to Italian architects, a condition being that the new palace is to have three large meeting-halls. One of these is intended for the Senate, and is to contain seats for 250 Senators; the second, for the Deputies, will provide seating for 508 members; the third, finally, will be reserved for State occasions, and have an area of about 7,500 square feet. Three separate entrances are to be provided for the two Houses and the public respectively. All three halls will have galleries for the Court, the diplomatic body, members of Parliament and Senators, and the general public, as well as large lobbies. The author of the accepted design is to be entrusted with its execution, provided he accepts the conditions and terms of remuneration of the Italian Government. In case an agreement is not arrived at, he will receive a prize of 100,000 lire (4,000*l.*), but his plans become national property. The committee which has to decide on the selection of the designs will have placed at its disposal a sum of 25,000 lire (1,000*l.*), to be divided amongst the authors of the five next best designs. All plans must be deposited by October 31, 1889.

FROM a correspondence which has lately taken place between the Chairman of the Hornsey Local Board (Mr. H. R. Williams) and the Vestry Clerk of Islington, Mr. W. F. Dewey, it appears that a serious dispute has arisen between those two bodies as to the terms of an agreement which had been arrived at by them for the rebuilding and widening of the Highgate Archway. We have carefully perused the correspondence, which certainly seems to show that the Islington Vestry will be seriously to blame if this much-needed improvement be not carried out at once. Everything appears to have been settled between the two authorities, subject to the Tramway Company obtaining their Act, and to the necessary land for the widening of the Archway being acquired by the Vestry and the Board in their respective parishes. Mr. De Courcy Meade, the surveyor to the Hornsey Local Board, has completed the plans for the work, and the Board has obtained the requisite land on its own side of the Archway. The Islington Vestry, it appears, have recently acquired the necessary land in their parish, at a cost of about 1,000*l.* This sum, they now say, is greater than they anticipated, and, consequently, they threaten to go back from their agreement with the Hornsey Local Board, and thus to postpone the matter indefinitely, unless Hornsey will undertake to reduce the cost of the work by between 3,000*l.* and 4,000*l.*, or, in other words, to include the cost of retaining walls (one of which it was agreed should be built at the cost of the Islington Vestry) in the agreed cost of the archway structure, viz., 9,000*l.* We hear that the inhabitants of Holloway are about to hold a meeting protesting against the action of the Islington Vestry in delaying this desirable improvement after having undertaken to co-operate on equitable terms in its execution.

IT appears that in addition to the uncertainty of being able to communicate with the guards on our railways (to which allusion was made by us in our issue of October 27), the unlucky traveller has no assurance that the signal of distress will receive attention even when it is noticed. In the very first reference that we have seen to such communications since last writing upon the subject, the guard admitted that he heard the signal, but said that as the train was then approaching a station at which it was to stop, he did not think it necessary to have the train pulled up. This occurred on the Brighton line, the case being made public on account of the passenger being summoned at the Wandsworth Police-court on Tuesday last for "unlawfully making use of the means of communication without reasonable or sufficient excuse." After hearing the evidence,—which was very contradictory, and into which we need not enter,—the magistrate dismissed the summons, but remarked very strongly upon the conduct of the guard. He observed that it is obvious that the apparatus is meant to be used only in cases of extreme emergency, so that the train might be pulled up at once and assistance rendered; and that to delay stopping the train until it reached the station might have been to decide a matter of life or death. We entirely coincide with these remarks, and are extremely surprised that we should so soon have occasion to enter another protest against the conduct of railway officials on this head.

AT Nuremberg has just occurred the very unusual case of a refusal on the part of the magistrates to sanction a builder's application, "on æsthetic grounds." It appears that a small angle turret was to be added to an existing building, and it was the opinion of the city authorities that this turret would spoil not only the appearance of the house itself, but that of the whole street: refused accordingly. As, however, the plans were prepared by a leading Nuremberg architect, who is, presumably, able to defend his own design "on æsthetic grounds," and thus prove that there *is* another side to the question, the case is likely to engage the attention of the higher courts.

THE "Quatuor Coronati" Lodge of Freemasons, membership of which is restricted to those brethren who possess either literary or artistic qualifications, have just elected, as the Master of this Lodge, Mr. W. Simpson, who has acquired a world-wide reputation as special artist for the *Illustrated London News*, and has also turned his extensive travels to account in the study of out-of-the-way architectural remains, on which he has read several papers of interest before the Institute of Artistes. Among the members of the Lodge are Professor Hayter Lewis and Mr. Walter Besant.

THE District Government of the Rhine Provinces having asked the Society of Rhenish and Westphalian architects to give its opinion as to a proposed monument to the late Emperor William, the reply, just published, is to the effect that it is undesirable to place it in a city,—a decision which probably avoided much local jealousy,—but out in the open country, if possible upon some prominent hill; and they further advise the expenditure of about 40,000*l.* for this purpose. Apropos of kingly monuments, the very successful statue of the late Emperor, originally modelled by Professor Baerwald for the City of Posen, has now been erected in replica in two other places, namely, at Altenberg and at Greiz. It is rightly pointed out in the German press that such replicas are a mistake; that if funds do not admit of an original statue, the memory of the first William would be more honoured by a bust upon a pedestal, or even by a medallion upon the wall of a public building, than by the constant repetition of the same design.

AFTER varied fortunes, Scott Russell's big ship, which was at first known as the *Leviathan*, is about to be placed in the hands of the "wreckers." The *Great Eastern* now lies off New Ferry Pier, at Liverpool. On November 20-22 current, a sale at auction will be held (on board) of all the iron-work, boilers, engines, machinery, &c., together with the rigging, spars, cordage, cables, and other equipments. This vessel, designed for a company by Brunel, and built by Scott Russell, was launched, or rather forced, by hydraulic power, into the Thames sideways, from the Isle of Dogs, in 1858. The operations extended over some time, and her progress was measured by inches. Mr. Scott Russell, who died at Ventnor in June, 1882, aged seventy-four, had been a member of a leading firm in the iron ship-building trade, and as an advocate of armour-clad men-of-war was a co-designer of the first vessel of the latter kind,—the frigate *Warrior*, which, if our memory serves us aright, was fitted out at the Victoria Docks, below Blackwall. The project to which we adverted on April 26, 1884, of converting the *Great Eastern* into a coal-hulk in Gibraltar Bay, was not realised, and on October 28, 1885, she was sold, under order of the Court of Chancery, at Lloyd's Captains' Room, and bought by Mr. F. de Mattos for 26,000*l.*, having been withdrawn from a similar sale, in 1881, at an offer of 30,000*l.* When lying in the Clyde last December the ship was purchased by a firm of metal-brokers for the sum of 16,500*l.* In 1865 she laid the first cable from Valentia to America. This broken cable she took up and repaired, laying another in the following year; and she was subsequently employed by a French company on a like duty. Her dimensions are:—Length, 679·6 ft.; breadth, 82·8 ft.; depth, 60 ft.; tonnage, 22,927 tons, builders' measurement. James Watt & Co., of Birmingham, constructed the screw engines, of 1,600 h.-p. nominal; the paddle-engines, 1,000 h.-p. nominal, were made by Scott Russell & Co. A model of the latter was deposited in the South Kensington (Patent) Museum. 10,000 tons of iron and 3,000,000 rivets (100 to each plate) were used in her construction.

YET another explosive, following closely after the recently-invented Roburite, has been introduced to the notice of English scientific men. The new agent is christened by the appropriate name of "Bellite." It is the invention of Mr. Carl Launn, of the Rolibro Explosives Company, Stockholm, and promises to become a formidable rival even to dynamite. A series of comparative trials between dynamite and the new explosive was instituted on the first of the present month at Middlesbrough. The trials demonstrated that bellite is safer to handle, and slower in action, but possesses more extensive power of destruction than dynamite. Two very conclusive experiments proved its absolute safety under concussion. The fall of a weight of half a ton from a height of 20 ft. upon a number of naked bellite cartridges laid upon an iron plate failed to produce an explosion, or, indeed, any effect beyond the crushing of the cartridges, and the indenting of the plate. Again, the ignition of 1 lb. of blasting powder, in a packet of these cartridges, merely scattered them about, not producing their explosion. We are, therefore, quite able to believe the statement that the Swedish railways carry bellite as ordinary merchandise. The competitive trials between dynamite and bellite demonstrated the greater local energy of the former, but the more extensive action of the latter. Two ounces of bellite tore and twisted a ⅜-in. wrought-iron plate like paper, while the same quantity of dynamite pierced a comparatively clean hole. Four ounces of bellite, exploded on a 70-lb. rail, made a gap 22 in. long, and split the web of the rail beyond. The same quantity of dynamite produced a gap of about 18 in. only, with scarcely any fracture beyond. Three pounds of bellite were exploded at a depth of 4 ft. underground, and sent the earth up to a height of more than 100 ft., making a cavity of 11 ft. in diameter,

and nearly as deep. The same quantity of gunpowder threw the earth up about 25 ft., leaving only a small hole. Thrown on the fire, bellite fuses and burns without violence. The new explosive consists of 5 parts by weight of nitrate of ammonia, and 1 part of di- or tri-nitrobenzole. It can be fired only by means of a detonating cap, is flameless, and gives off no offensive gas. The trials at Middlesbrough appear to justify the anticipation that bellite will presently come into extensive use in blasting operations.

WE have received from Mr. L. H. Lefevre a copy of a large and careful etching of the Tower of London by Mr. Laurence B. Phillips, apparently designed more as a correct architectural representation than as a piece of effect in etching. The Tower-garden trees in the foreground, however, are well introduced so as to give, by their dark masses, relief and light to the building beyond, and the whole forms a fine representation of the Tower, all the more satisfactory as it is taken from a point of view which does not include the sham-antique additions lately added under the direction of the Office of Works, and which we observe are still in progress, a massive wall and a large "Mediæval" gateway being now in course of construction on the site from which the modern warehouses were removed.

THE exhibition of the Institute of Painters in Oil Colours contains, as usual, a good many good things, some oddities, and a good deal of commonplace. The President's contribution, a portrait-group of two young girls, "Maud and May" (250), one with a violin and one seated at the piano, may be called "a study in reds," powerful enough in colour, but unfortunate in the fact that the feet of the standing figure are out of the picture, the frame cutting off her legs just below the frock, and giving the impression of representing a dwarf. Mr. Dollman's much-praised little work, "Vols. I., II., and III." (357), three girls reading, shows real humour, but is hard and rather inharmonious in colour. Two bust portraits by Mr. Shannon, "Mrs. White" (10) and "Miss Nichols" (431), are beautiful in colour, expression, and a soft breadth of execution. In contradistinction to these, Mr. Herman Herkomer's half-length portrait of "Miss Margaret Jex-Blake" (577) is a very forcibly-painted portrait of the realistic order. Mr. Arthur Hacker's "Children's Prayer" (537), a fine work in some respects, misses its mark rather, owing to the common and inexpressive face of the mother. In "Corked!" Mr. Dendy Sadler paints again two of those *bon vivants* of the early part of the century, whom we saw in the Academy discussing their port in an inn-garden. The character of the figures (and costumes) is admirable, but there is a want of the feeling of open-air about it. Mr. Frank Dadd's "Awaiting Sentence" (265), where a little boy, caught stealing apples, is brought into the vicarage dining-room by the gardener, is admirable in every sense; in the quiet humour of the whole, the character in each figure, and the thorough execution of every detail. Among other figure-pictures a little very highly-finished collection of small figures, by Miss Beatrice Meyer (whose work of this kind we specially noticed last year), "The Future Prima-donna" (304), is one of the best things in the gallery —an interior in which we might fancy Mozart at the old-fashioned piano, and Aloysia Weber trying her *scena* before the family circle. Mr. Stock's "Sin piercing the heart of Love" (590) we fear is an ambitious failure, giving the artist all credit for being ambitious. Good landscapes are in larger proportion than good figure pictures. Among them may be named Mr. Fraser's "Lobster Catchers," (32; it is to be hoped his boatmen know their ground well, for they are knocking about among some awkward-looking reefs); Mr. Adrian Stokes's "On the Cornish Towans" (86; what is a "Towan"?), a remarkable bit of sunlight effect; Mr. C. E. Johnson's "Ripe for the Sickle" (120), rather "painty" in the foreground, but with a grand hill in the background; Mr. Cotman's "St. Ives, Evening" (158), a fine effect and very like the place; "Flooded Glebe" (240), by the same artist; Mr. Thos. Collier's "Mountains at the Source of the Lledr" (247), one of his fine examples of the old broad school of landscape painting, of which David Cox was the great apostle; "A Bright October Day" (330), among sand-hills, by Mr. A. Helcké; "Trevetho, Cornwall" (346), by Mr. Alfred East, who also contributes a still finer work, "Evening after a Storm" (426), to which, by the way, the wrong title is given in the catalogue illustrations; "A Garden in Winter" (438), by Mr. Frank Dillon; "Moonlight through Ilex Trees" (468), by Mr. Arthur Severn, one of the finest and most successful of the studies of special effects which he often contributes, with the moonlit water glittering between the dark stems of the trees; "Where Autumn tints imbrown the arching Woods" (531), by Mr. Keeley Halswelle, an example of the old Academic school of landscape,—*passé*, but good of its kind; "Moonrise" (567), by Mr. Alexander Harrison, a very successful attempt to paint sea touched by moonlight; and "On the Sussex Downs," by Mr. Wimperis. Among various bits of "still life" may be mentioned "Apples" (479), by Mr. H. M. Livens, and "My Grandfather's Punch-ladle" (252), by Miss Edith Stock. Among the figure pictures, we should not have passed over Mr. Fred Morgan's "Tired Gleaners" (313), a pretty idyll.

WE learn that notice has been given by the Executive Committee of the Royal Tapestry Works at Old Windsor to the remaining employés (the French contingent having taken their departure some months ago) that their services are no longer required. This ancient industry was revived at Windsor fourteen years ago under the patronage of the late Duke of Albany. A block of cottage buildings, built of red brick in the revived Queen Anne style, constituted the works, which, together with the dwelling-houses and grounds, cover about seven acres—the land being the property of the Crown. In the large hall or principal workroom is a carved stone mantelpiece, said to have been removed from Battle Abbey, and presented to the works by Lord Brassey. The enterprise was managed by the following committee of gentlemen, and who also formed a guarantee fund:—Mr. John Coleridge Kennard, Sir Richard Wallace, Bart., Sir Robert Collins, Mr. Henry Hucks Gibbs, Mr. Anthony Gibbs, Lord Brassey, and Sir Albert Sassoon. The venture has not been a success, and the losses are roughly estimated at 60,000*l.*, while the stock of tapestry and the suite of furniture on hand is valued at 7,000*l.*, Such an end of a well-meant undertaking is rather melancholy, but we fear that the failure may be partly ascribed to a want of perception, on the part of the management, of the true scope and objects of tapestry art. When we hear that "one of the most beautiful specimens" of work produced was "an elaborate view of Windsor Castle," it is pretty evident that the designers and makers were quite at sea as to the objects to be aimed at in tapestry work. Scenic landscape in tapestry is little better than a vulgar gewgaw; the proper object of the art is the production of conventional decorative design. Thanks to the teaching of Mr. William Morris and others, the best-educated section of the public are beginning to understand this now, and would no more hang up a tapestry landscape than they would lay down one of the old-fashioned carpets with huge naturalistic flowers sprawling over them. It is said that the manager and apprentices have petitioned the Committee to be allowed to carry on the work. If so, let them take advice from those who are competent to give it, and reform their style of design, and they will have, perhaps, a better chance of success than in the past.

THE Carleton School Board appear to have "beaten the record" in their demands from competing architects in the competition for Lothersdale School, particulars of which are before us. For a premium of £20, plans are to be accompanied by specifications and detailed bills of quantities. "The architect whose plans, &c., may be first chosen by the Board must make such alterations in the same as may be required by the School Board, and, at his own cost and risk, submit the same for and obtain the approval of the Department before he becomes entitled to the premium." Any plans, &c., which may be selected by the Board and approved of by the Department, and for which the premium of £20 may have been paid, "shall become the sole property of the Board, and may be used in any way the Board may elect without any restriction whatever." This is a new advance in the endeavour to fleece the profession through the medium of competitions. It only remains now for the Committee to ask that full-size detail drawings for the whole building and the school fittings should be thrown in, as an extra trifle of accommodation on the part of the architect.

OLD SITES AND PROJECTED IMPROVEMENTS.

Sic, ubi fata vocant, udis abjectus in herbis,
Ad vada Mæandri concinit albus olor.
OVID, Heroides, vii. 1-2.

HAVING considered upon the requirements and existing available resources of certain areas in Whitechapel (Bell-lane and Great Pearl-street), Greenwich (Horseferry-road), and Shoreditch, the Metropolitan Board of Works, at their meeting on Oct. 19 last, resolved that it was at present inexpedient to prepare any schemes in connexion with those sites under the Artisans' Dwellings Improvement Acts. They further agreed, on Nov. 9, not to remove the block between Bozier's-court and the southern end of Tottenham-court-road. On the other hand, the Board are minded, clearly, not to relinquish office without setting their mark upon additional projects for metropolitan improvement. Whilst they cannot expect to see these, their last measures in that direction, fairly taken in hand, they may at least claim the merit of their inception. Assuming, *pro formâ*, that they will still be in office, they decided to apply to Parliament in the forthcoming session for powers to carry out three extensive improvements. These relate to (1) the widening of Mare-street, Hackney, between Paragon-road and the North London Railway Station, at an estimated net cost of 167,000*l.*; (2) the widening of Old Brompton-road (here known rather as Old Brompton) from Cranley-place to South Kensington Station, provided the Kensington Vestry do bear one moiety of the cost, which is calculated at 46,000*l.*, exclusively of the works; and (3) the widening of Kensington High-street, between the parish church and Palace-gardens, at an estimated net cost of 169,500*l.* It will be remembered, perhaps, that of late years so much of this last-named main thoroughfare as lies westward of the church,—that is to say, between the police-station and the end of Hornton-street, on the northern side,—has been dealt with in the same manner. The front of the old Charity Schools, of date 1713, as designed by Sir John Vanbrugh, with its two quaint figures of a boy and girl, was pulled down for the new Town Hall. A view of the Schools forms a frontispiece of Faulkner's "History" of the parish, 1820. The original design had a curious square central tower,—in two tiers, with angular buttresses, circular-headed openings for the bell, and a top pediment,—which rose from the central second-floor window-head. The figures, in the costume of the day, have been removed to the new buildings at the rear. The school-house was enlarged in 1817-8, and latterly served for a Savings-bank. The Town-hall was built after the designs of Mr. Robert Walker, 1878-80.* The site taken included the National Schools and Nos. 11-14, Church-court, and alone cost nearly 7,000*l.* The former vestry-hall adjoining was rebuilt, in the Jacobean manner, by Mr. Broadbridge, in 1852, instead of the room by the parish church. Of that hall we published a woodcut on June 12, 1852. The parish church was rebuilt by the late Sir G. G. Scott (see our illustration, with a plan, of Jan. 1, 1870).

To demolish the houses which constitute the northern side of Kensington High-street, eastwards, will give a *coup de grâce* to this particular

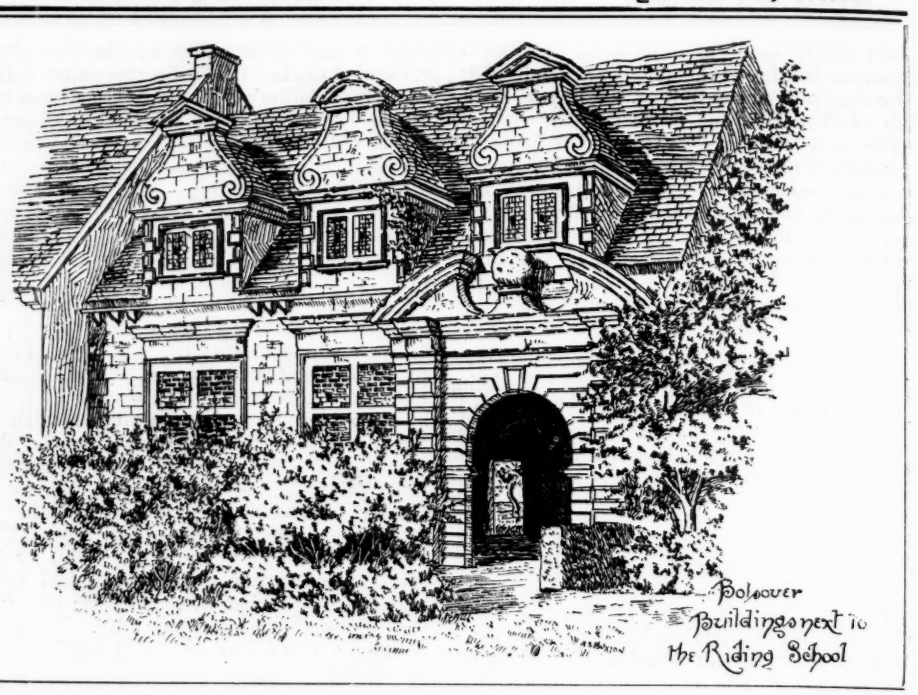
* Lord Kensington laid the foundation stone on Dec. 13, 1878; opened on Nov. 7, 1880, by her Royal Highness the Duchess of Teck.

portion of old Kensington, which is gradually vanishing away. Most conspicuous amongst the four or five blocks,—clearly set out in Rocque's map of 1750,—are the butcher's large shop, Nos. 18 and 20; the "King's Arms" tavern and hotel, hard by the Palace Gates,* which, if we are not mistaken, suffered grievously by a fire on June 10, 1857; and the "Civet Cat," at the western corner, by Church-street. At the rear stand some old tenements by names of Clarence-place, leading to the Wesleyan chapel; Brown's-buildings, and Cumberland-yard, alongside of the "Duke of Cumberland." According to Bacon's large scale map of 1880 the boundary of St. Margaret, Westminster, parish passes, north and south, between the Wesleyan chapel (west) and Brown's-buildings (east), and so, by a return eastwards along the northern side of High-street, includes the rest of the buildings under review.

This, our generation, has witnessed a gradual disappearance of certain premises which ranged along the other side of the street. We retain a vivid memory of the tournament and other sports in Batty's Hippodrome. Its arena, open to the sky, lay between the old "Warren," or "Rookery," and what is now Prince of Wales's-terrace. The "Warren" comprised New-court, Jennings'-buildings, Cooper's-gardens, and Palace-place, whose denizens were wont to congregate in the "Tavern-yard." Those squalid and overcrowded habitations, together with the miser Sir John Colby's house, *temp.* George I., and its neighbour, Old Kensington House,—home of Louise de Querouaille, Duchess of Portsmouth, ancestress of the Dukes of Richmond; of the schoolmaster, James Elphinston, the translator of Martial, and friend of Samuel Johnson; and of Mrs. Inchbald in 1819-21; all these premises were cleared away in 1872–3 to make room for that other Kensington House, which Mr. Albert Grant caused to be erected for himself, by Mr. James Knowles, architect, on a site about 7½ acres in extent, and at a total cost of it is said nearly 275,000*l.* We gave a full description of the mansion in our columns of July 8, 1876 (xxxiv, No. 1744). In Macnevin's edition of R. L. Sheil's speeches, with a memoir, &c. (1845), will be found an interesting account of the school which was kept in the former Kensington House by the Jesuit Pères de la Foi, under M. le Prince de Broglie, who had Sheil and Charles X., King of France, for his pupils. It afterwards became a Catholic boarding-house, where lodged the Cosways for a few months, and during the last two years of her life, Mrs. Inchbald. Her death, in her sixty-eighth year, is reputed to have been accelerated by tight-lacing. Colby House, built in 1720, over against the Palace gates, had a centre and two wings, two storeys high. Mr. Albert Grant never occupied his lordly pleasure-house. Having been twice bought in at auction, it was ultimately sold in lots in June and in September, 1882, realising a total of 9,900*l.* The white marble grand staircase, that reached up to the second floor, and cost 11,000*l.*, was bought for 1,000 guineas by the firm of Madame Tussaud & Sons, who have set up part thereof, with the four caryatides of heroic size, in their new rooms in Marylebone-road. Similar adornments, all being upon a most lavish scale, sold for correspondingly small sums. The gilt cast-iron railing, fronting the street, for instance, which cost 3,500*l.* was purchased at 300 guineas by the Sandown Park race committee.

So passed away this second, but inglorious, Kensington House. The ground it covered was speedily appropriated. The London and County Bank removed from No. 67, High-street, into some premises, on the site of Colby House, which were erected in 1885 from the designs of Mr. Alfred Williams, architect. The remaining portion of Mr. Grant's property was acquired by Mr. J. T. Carr, who laid out the estate for the several blocks of seventy-five houses, in all, which are known as Kensington-court. Amongst the architects employed we may mention Mr. J. J. Stevenson and Mr. T. G. Jackson†; and, of the later flats, Messrs. Perry and Reed.

Between Nos. 61 and 63, High-street, is Young-street, so-called after its builder, who also built much of Kensington-square, in the reigns of James II. and William III. At No. 13 (since 16), during the interval 1847-53, lived Thackeray, whose "Esmond," written in that bay-windowed house, justly makes him the *vates sacer* of the neighbouring Kensington-square. Here the Chevalier St. George pays his suit to Beatrix, and all readers of that tale will recollect how, on the morning of Sunday, August 1, 1714, George is proclaimed before the King's Arms, by the Palace gates in High-street. Here, too, may be seen some of the powdering closets of the Georgian era. Thackeray removed from Young-street to what was then No. 36, Onslow-square, and thence to the red-brick house which he had built for himself on Palace-green, formerly "The Moor," at the southern end of Kensington Palace Gardens, *olim* Queen's-road, where he died on December 24, 1863. The writer went to his funeral at Kensal-green, and there, amongst the crowd around his grave, saw that genial author whose lines in *Punch* pleaded arrest of judgment by those who imputed cynicism to his dead friend; with one or two painters whose pencils owed inspiration to his pen, amongst them Sir John Millais, who now lives hard by, in Palace-gate. De Vere-gardens commemorate the circumstance that the Manor of Chenesitun, as it is termed in the Domesday Survey, was in the Conqueror's time held by Alberic, or Aubrey de Vere of the Bishop of Coutances, who had received it from the King. It then passed to the De Vere's, Earls of Oxford, and continued to belong to that house until on the attainder of John, Earl of Oxford, Edward IV. bestowed it upon his brother Richard. They subsequently recovered possession, their holding thus lasting for a period, in all, of five centuries. At the corner of Kensington-road and De Vere-gardens, is the house which in our day forms subject of a leading case, by way of the appeal to the House of Lords, known as "Barlow and another *v.* Vestry of Kensington," in the matter of its line of frontage (ii. "App. Cases," H.L. 257).



SKETCH AT BOLSOVER.

THE buildings shown in this sketch, by Mr. A. L. Buxton, form a portion of the building added by the son of Sir Charles Cavendish, who built the main portion in the early part of the seventeenth century. The building in the sketch is exactly the same in detail and general design as the Riding School, but the latter is so hidden by trees that it was impossible to take a sketch of it.

ARTS AND CRAFTS EXHIBITION SOCIETY.

"MODELLING AND SCULPTURE."

THE second of the current series of lectures at the New Gallery in Regent-street was delivered on the 8th inst. by Mr. George Simonds.

The concluding sentence of the lecture gave the *motif* of the whole. We cannot make an artist, who must be endowed with the poet's mind; but we can teach a craft. Accordingly the artistic side of the subject was left untouched; its historical aspect was only casually glanced at; and the address, which was spoken *ex tempore* and lasted an hour, was confined to an exposition of the mechanical processes involved in the sculptor's art, and advice as to the qualities and suitability of the various materials and tools employed by him.

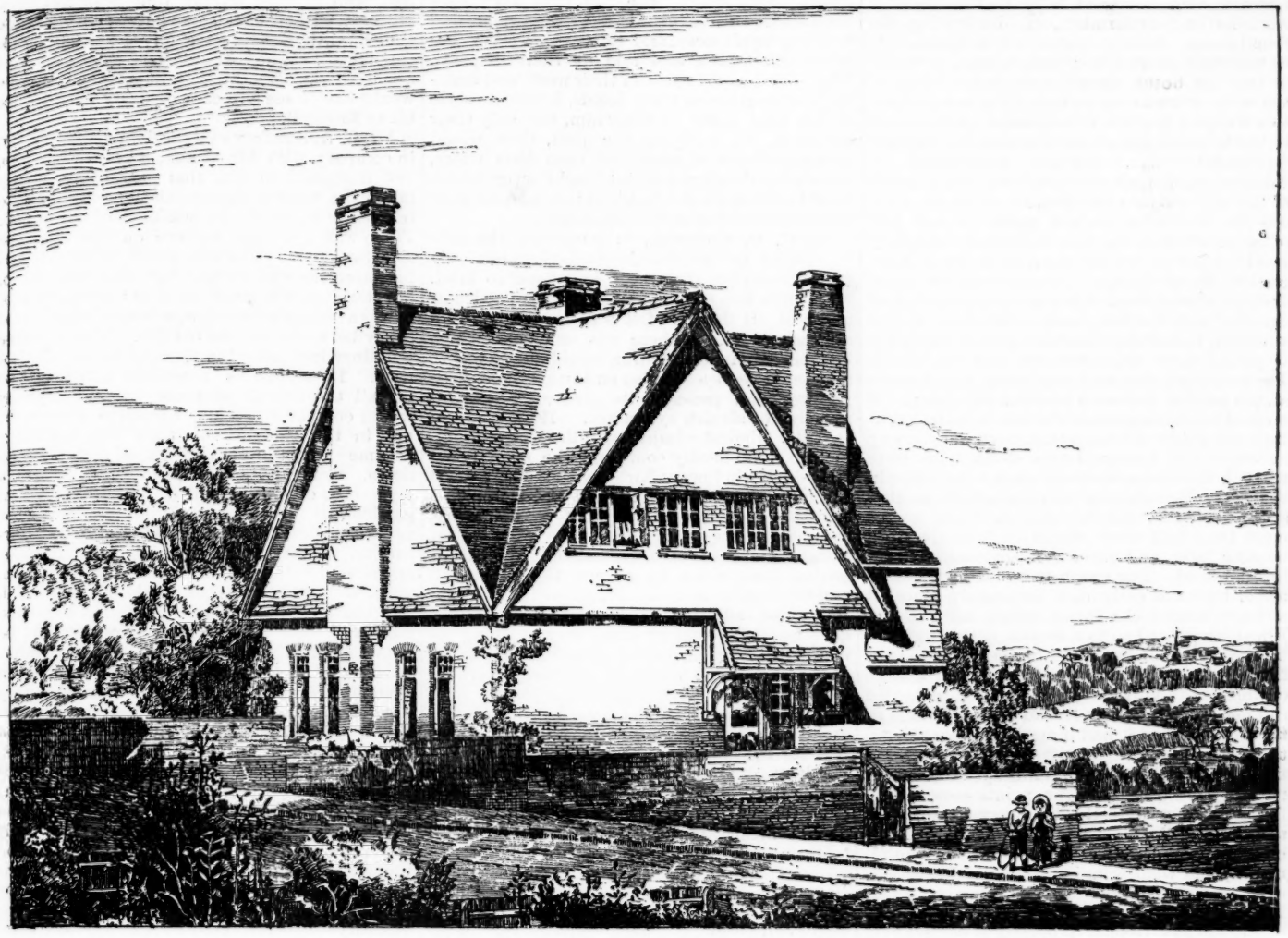
The best arrangement of stands and bankers, the construction of turntables, the forms of cores for various materials, the proportion of "roughing" to the modeller's clay, and the best medium for colouring the modelling wax, were each in its turn exhaustively dealt with. Practical hints as to the due damping and necessary drainage of the clay model, and as to the various processes of "case" moulding and "waste" moulding preliminary to casting, followed. Some useful information was given on the subject of modelling in gold, silver, copper, tin, and iron, soft Swedish iron being easily modelled cold, and copper lending itself readily by reason of its extreme ductility to the sculptor's purposes. No improvement has taken place in the few simple tools used by the sculptor, the drill, the point, the chisél and the rasp, and such as they were in the time of Pericles they still are. Nothing was said as to the working of the harder granites and porphyries, nor was the beautiful art of ivory carving alluded to. But an hour is not much for so wide a subject, which would, indeed, as the lecturer said, afford material for a week's discourse.

The interest of the address was heightened by the manual illustrations which were adroitly performed during its delivery upon an unfinished clay bust of Mr. Walter Crane. It is upon the plastic clay that almost the whole of the sculptor's art is really expended. Into this he puts his first inspiration, and upon this he works until his ideal is satisfied. It is then handed over to the craftsman for translation into marble or bronze. In the former case the process is prosaic enough, and it must be owned the system of "pointing" and reproduction in fac-simile by compasses and callipers, and (if enlarged or reduced) by the application of the theorem of similar triangles, does take a little of the poetry out of the finished works for those who are behind the scenes. The original finished sketch came straight from the artist's hand, literally, for it is to the sensitive touch of finger and thumb that all its charm are due. The bust of the President, which was used for illustration, was described as wholly thumb work, assisted only by the nail, which, as the lecturer remarked, is found very *handy* for dividing the hair, and marking the finer lines, &c.

The statue, though never so carefully finished, is by comparison a dead thing, and every one who has seen the clay original before reproduction must have sighed over the inevitable loss of artistic point and force involved. If this inventive age would but invent a plastic medium which should be amenable to the artist's touch, and would then, without change of form, harden into permanence, it would, indeed, deserve our warmest thanks. It might be supposed that the baked clay,—terra-cotta,—provided the artist with such a resource, and that in it, at least, the artist's work was preserved at first hand. But the difficulties of drying and firing, the risks of shrinkage and distortion, and the possibility of destruction in the kiln or afterwards,—in either case wasting all the artist's labour,—are hindrances which can never be

* Sir C. Bigot's water-colour, of *circa* 1848, in the British Museum.

† We illustrated Mr. Jackson's design on June 27, 1885; Mr. Williams's on September 11, 1886.



"Wandle-cot," Carshalton.—Mr. H. D. Appleton, Architect.

wholly surmounted, and limit the employment of terra-cotta to comparatively small and unimportant works.

Monumental works must be in marble or in bronze. The selection of a sound block of the former, having a suitable grain, being free from flaws, and capable of resisting exposure to the weather, is not a very trying necessity for the modern sculptor, who has the abundant Carrara quarries to draw upon.

But the casting of a bronze statue is a different matter, and presents engineering difficulties of a special kind. The lecturer expounded, by the aid of diagrams, the whole process, and dwelt at some length on the numerous precautions to be taken against accidents and explosions by the sudden expansion of the heated and imprisoned air.

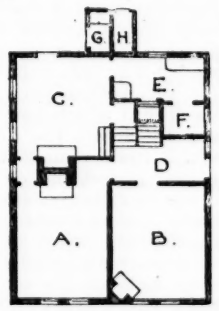
Mr. Simonds secured the confidence of his audience by his obvious command over all the methods he described and illustrated. His address, the only fault of which was its brevity, was received with deep attention, and was rewarded at its close by a spontaneous and hearty burst of applause.

The New Fish Market in the City.—One of the last official acts of Sir Polydore de Keyser, as Lord Mayor of London, was to open the new fish-market, which has been erected by the Corporation on Snow-hill, and which will replace the market opposite, which latter will become, as was originally intended, a fruit and vegetable market, in lieu of the inconvenient and dilapidated Farringdon Market. The new market, which was designed by the late Sir Horace Jones, occupies a space of 14,000 square feet, and has cost (according to the *City Press*) about 25,000*l*. The style is Italian Renaissance. The building has a granite base with Portland stone pilasters, surmounted by cornice, pilasters, and dormers of Portland stone. The work has been carried out by Mr. Mark Gentry. There are thirty shops or stalls, all of which, excepting three or four, are already tenanted. The market, it may be added, is largely built on a substructure of iron girders above the London, Chatham, and Dover Railway's City extension.

"WANDLE-COT," CARSHALTON.

THIS is a summer cottage of a cheap character. The walls are only carried up to the first-floor level, the vertical tiling being hung on rafters. There are five bedrooms and a bath-room and w.c. on the first floor. The materials are Epsom red bricks and Ewell hanging-tiles and Broseley roofing-tiles.

A. LIVING ROOM.
B. PARLOR.
C. KITCHEN.
D. HALL.
E. SCULLERY.
F. LARDER.
G. W.C.
H. COALS.



The work is being carried out by Mr. G. Stunt, of Park-road, Forest-hill, S.E., from the design of Mr. Herbert D. Appleton, F.R.I.B.A.

BIRMINGHAM ARCHITECTURAL ASSOCIATION.

THE present session of this association was opened on Wednesday last, the 14th inst., by a conversazione held in the Edgbaston Assembly Rooms, at which about 300 members and friends were present, including, amongst others, Messrs. J. Naden, President; W. Doubleday, Vice-President; H. R. Lloyd, Hon. Sec.; F. B. Osborn; F. B. Peacock; J. W. F. Newton; Hy. Beck; C. E. Bateman; W. H. Bidlake; A. Reading; V. Scruton; Councillors M. Pollack (Ex-Mayor), R. F. Martineau, J. Bradley, Lawson Tait; Registrars Cole and Parry; Profs. Hillhouse and R. H. Smith; Messrs. E. R. Taylor, W. Wallis, J. Pratt, J. W. Tonks, W. S. Till, S. Walliker, and P. Porter.

The proceedings commenced with a reception of the guests by the President and Committee, after which a few selections of instrumental music were given in the ball-room.

In the drawing-rooms were arranged a large collection of sketches and photographs of interesting buildings, noticeable among them being the sketches lent by Mr. H. Pope, and the photographs by Mr. H. Baker; whilst the ball-room was rendered additionally attractive for this occasion by the display of Oriental curios and draperies, and some specimens of local art manufactures. Among the works thus exhibited were several very good specimens of wood-carving lent by Messrs. J. Plucknett & Co., and the art-metal work of Messrs. Hart, Son, Peard, & Co. The decorative glass of Messrs. J. R. Lee & Co., and the various specimens of drapery, &c., from Messrs. Liberty & Co., also attracted much notice. Dancing was begun at 9 p.m., and was carried on to the small hours of the morning.

THE ARCHITECTURAL ASSOCIATION.

THE second meeting of this Association for the present session was held on the 2nd inst., in the meeting-room of the Royal Institute of British Architects, Mr. H. D. Appleton (President) in the chair.

The following new members were elected, viz.:—

Messrs. J. A. Waddington, E. O. Warne, S. P. Davis, J. B. Tansley, E. C. Finch, W. L. T. Brown, M. J. Hardwick, A. Spiers, A. J. Roddis, F. R. Rhoades, W. Langhein, A. Cox, C. Roche, A. G. Salmon, A. E. Watson, H. P. Adams, A. P. Crabb, R. N. Sinclair, L. H. Bishop, S. Howard, G. P. Armstrong, M. Price, A. Hogwood, E. R. Cook, P. S. Worthington G. E. S. Stratfield, H. E. Kirby, J. C. Watt, W. W. S. Smith, J. Hunt, J. H. Richardson, H. L. Goddard, H. F. Mence, G. Kenyon, D. B. Niven, A. H. Crawford, A. Wollheim, J. H. S. Fane, A. A. Abrahams, E. C. Frere, J. A. Pywell, F. E. Williams, F. J. Potter, J. Murray, J. Steuart, J. R. Stark, F. Cook, J. W. Wyles, A. Whitcombe, E. A. Whipham, W. C. Ashworth, H. E. Elkins, W. E. Holland, G. G. Lynes, J. W. Hall, G. P. Pratt, R. W. Gibbon, H. Story, F. J. Slater, C. G. D. Innes, E. J. Walls, H. G. Leslie, H. C. Main, C. Evans, W. A. Hughes, and W. Palotta.

Mr. J. A. Gotch read a paper on "Elizabeth and Victoria," which we printed *in extenso* last week.

The Chairman, in opening the discussion, remarked that the interesting paper they had

heard read by Mr. Gotch would make them look forward with increased hope to the valuable work he had undertaken, of illustrating the Renaissance chimney-pieces of England. If he might be allowed to express a hope, it would be that Mr. Gotch should extend the scope of the work, so as to make it really a comprehensive study of English Renaissance work similar to the splendid one on the German Renaissance (applause). Mr. Gotch's description of Elizabethan houses reminded him very much of Bacon's essay on building, in which he drew out his idea of a perfect palace, and it had often occurred to him that that would be a very good subject to set for the Architectural Association Medal design. The subjects for those designs should tend towards strengthening or drawing out the imaginative faculties of the students, rather than exercising their ingenuity by giving them restricted sites and conditions. The restricted sites and conditions would come all too soon in their own practice (laughter). It seemed to him that one of the lessons to be learnt from the study of Elizabethan work was the way in which the foreign forms dealt with were treated. The unconventional work to be found in the early Renaissance buildings, such as Bolsover, Wollaton, and Kirby, gave those houses more than half their charm; but, as the work became later and more conventional, the interest waned. The lesson to be learned seemed to be, that the early men thoroughly digested and assimilated the forms before using them. Elizabethan art had to a certain extent suffered by the revival of the style in the early part of this century, when so many examples of it were carried out in Portland cement (laughter). He did not know whether it had affected them in the same way as it had him; but he considered there was no more ghastly work than some of the so-called Elizabethan buildings of the early part of this century. The points most suited for discussion were the best way of studying the English Renaissance; the way in which it could best be adapted to the present requirements; and what were its particular features as compared with those of the other styles of Renaissance art (applause).

Mr. Francis Hooper proposed a cordial vote of thanks to Mr. Gotch for his admirable paper. The way in which the subject of Elizabethan architecture had been brought forward was particularly instructive, because it put before them a period when new demands were being made upon the architects of England, and showed how these demands were met. In the time of Elizabeth the country enjoyed peace, and it was therefore possible to give up the old fortified system of domestic residences. The Church has been shorn of much of its wealth, and its property distributed amongst individuals, who at once wished to show what use could be made of it. The consequence was that new demands were laid before the architects, who, finding the prevalent styles in England somewhat unsuited to their clients' wants, went to Italy, where was to be seen a style of palatial architecture which seemed likely to suit their English patrons. Mr. Gotch, however, laid before his hearers the fact that those architects did not in every way succeed. They gained a certain palatial effect at the expense of the comfort which should have been their first consideration. It might not be the lot of many present to build palaces such as Elizabethan architects designed; he was afraid most would have more modest work to do. Architects might still, however, strive to secure dignity in their work, although they might only have to build a block of warehouses, shops, or artisans' dwellings. It was therefore possible to study the Elizabethan men, and to gain, not at the expense of comfort, but perhaps at the sacrifice of time and thought, something of what the French now seemed to have gained. He had been for some little time in France this summer, and it was very encouraging to him to find French architects commending the comfort secured in planning, and the simplicity, of modern English domestic architecture. Simplicity was an admirable thing to attain, but the dignity of buildings should also be studied. In this, the greatest and richest city of the world, there might be more in the way of monumental architecture. The present street architecture, though it contained in itself many gems, showed but little studied dignity. Indeed, if dignity and picturesqueness were now obtained, it was rather a matter of chance or accident. Turning to another side of the subject, they had to bear in mind the opportunities they now enjoyed, and which were not afforded to the Elizabethan architects. The comprehensiveness of their studies was brought out by the fact that they were compelled to study all new materials and building appliances, and to consider every improvement which was laid at their disposal. This added to the scope of their work, and materially strengthened their hands, hence no style of the past could be their aim, but only their assistant. In studying the past, they would gain experience of what had been done before, and should develope a style of architecture which would exhibit all the facilities they had for construction and decoration (applause).

Mr. H. O. Cresswell, in seconding the vote of thanks to Mr. Gotch, said that his only regret was that the paper had been so brief. Mr. Gotch was such a master of that particular phase of art that one felt a little diffidence in criticising him, but there was one point which he believed Mr. Gotch even would admit was to a certain extent a blemish on Elizabethan architecture, and, perhaps, its greatest blemish—namely, its slavish symmetry. He was afraid that the blindest admirer of Elizabethan architecture could hardly commend the magnificent 20 ft.-high windows at Kirby, with a floor carried through the middle of them. Mr. Gotch had said that they could not do that at the present day, but he saw an example of the same sort of thing in one of the professional papers,* as having been done by a very famous church architect quite recently (laughter). Whether they had admired it or not was another question, but certainly some very scathing remarks had been made on it, and if they knew the name of the architect of Kirby, perhaps they might also have a rod in pickle for him, always presuming it was done by the original architect. The President had suggested a subject for consideration, as to how Elizabethan architecture might be adapted to modern requirements, and what might be learned from it at the present time. There was always a great difficulty in studying Elizabethan architecture with the view, he would not say of cribbing, but of extracting suggestions from it (laughter). The Elizabethan architecture they knew was itself a Renaissance, and the men who employed it were introducing what they believed to be a reproduction of Classic detail. Gothic forms of arrangement had not entirely gone, but there was no doubt they believed they were reproducing Classic work to a very great extent. If some of the details—the cornices, caps, and other ornamental features,—were examined, it would be found that there was a great difference between the details executed by the Elizabethan architect and those executed by the Classic architect,—he was speaking, of course, of real Classic work. They, in the present day, had the advantage of a great number of archæological researches, studies, and books by eminent men, which showed the whole detail of the Greek or Roman temple, but these advantages were not at the command of the architects of the Elizabethan period, consequently it would be absurd affectation for them in the present day to imitate the detail of a period of art which itself aimed at reproducing that of a former period, and, as we now knew, only succeeded very imperfectly. Whether a good deal could not be learned from studying the quiet dignity and repose of these Elizabethan mansions was quite another question. Unfortunately, they had not the same requirements nor the same easy-going clients that the old men had, and the impression left by the paper on his mind was one of regret that he had not been an architect in the days of Elizabeth (applause).

Mr. S. W. Kershaw, F.S.A., remarked that one great charm of the Elizabethan architecture was its originality, partly arising from the revival, or rather birth, of the New Learning, which touched all England in its power. This change is depicted by the graphic pen of Mr. Green, the historian, who says: "The strength of the Mediæval fortress gave way to the pomp and grace of the Elizabethan hall." It was almost impossible to reproduce some of the forms one occasionally saw, because he believed the architects, whoever they were, and some of them were noted men, worked with a great deal of love for their art. It was interesting to watch the adaptation of the ornamental sculpture of the time, derived from Classic models. The President had referred to a book lately brought out on the German Renaissance, and everybody who had seen it must admire that beautiful work. He only wished that some one would illustrate the English Renaissance on the same scale (applause). They knew that Mr. Gotch was about to do something of importance, but he would like to see a record of every Renaissance bit in England.

Mr. L. A. Shuffrey said he had visited Kirby, in company with Mr. Gotch, a year or two ago, and it seemed to him that most of its charm lay in the want of that regularity which was to be seen in many of the buildings of the period. There was a certain balance on the entrance side, but no two parts were exactly alike. He had forgotten the window that had been referred to, but there was not much harm in carrying a floor across a mullioned window, as a solid panel could easily be made on the outside. Most of those buildings had gained immensely by the hand of time. If architects nowadays attempted to use all the details of those times, everybody would complain of their excessive coarseness, but in the effluxion of time the buildings became grown over with moss, and softened down. Generally speaking, however, it was a style to be carefully studied. What struck him particularly in those buildings was the apparent necessity for carrying the architecture on to the ground. Burleigh, for instance, appeared to drop on the plane of the lawn, without any terraces or work of that kind, and the effect, to his mind, was most unsatisfactory. One symmetrical front could be obtained on the garden side, without interfering with the plan, but to arrange a symmetrical entrance elevation seemed a very difficult thing to do. It struck him, when Mr. Gotch was discussing the method of work in those days, that the buildings must have taken a very much greater time to erect than at the present time. No doubt the old men put up their stone walls first, and began to think about the woodwork when the building was fairly well to be seen, and in that way they had an immense advantage over the architects of the present day. To see the whole concern on paper, and to get out the details for the quantity-surveyor, before the job was commenced, was quite a different matter.

Mr. C. H. Brodie said that they had been told that, although some French architects admired the Victorian architecture, they considered there was a smallness and want of dignity about it. He would ask, were the architects responsible for that? He believed they were to a great extent, and especially in the case of street architecture. Was it absolutely necessary for an architect, who was called in to build on a 20 ft. or 30 ft. frontage, to put up something quite different to what had been erected next door, probably only six months before? Was it absolutely necessary that every string-course and cornice should be so much higher or lower than those of the man next door? Was it not possible to erect buildings that did not clash with those next them? And should we not then get rid of the feeling foreigners seemed to have, that our street frontages were a very higgledy-piggledy lot, although often very good in themselves (applause)?

A Member said that Mr. Gotch had asked what architects would think now if some nobleman came down and made suggestions in the middle of their jobs. It seemed to him that was the very thing they would like, because it was just when such interference took place that the profit came in (laughter).

The President, in closing the discussion, said he was afraid Mr. Brodie's ideas would be strongly combatted by the demon of advertisement, which caught hold of clients, and sometimes, he was afraid, of architects too. Then again, people here did not like to be controlled by their next-door neighbour in regard to anything. Mr. Hooper's remarks on the dignity which might be imparted to modern buildings was a very valuable suggestion, and that was one of the reasons why he (the speaker) threw out the idea of treating Bacon's essay as a subject for their designs. Mr. Cresswell might find a great many instances of floors crossing windows in other works than those of John Thorpe, or any of the Elizabethan architects. He had only to go down to Whitehall, and he would find instances of it.

The vote of thanks was then put to the meeting, and carried by acclamation.

Mr. Gotch, in the course of his reply, said the President had been kind enough to mention a work on Renaissance chimney-pieces in which he (the speaker) was presumed to be engaged, but he was bound to say he was not aware of

* See *Builder* for Sept. 22 last, for illustrations of the way in which Lord Grimthorpe has dealt with the south transept window at St. Albans Cathedral. It is a mistake, however, to suppose that the cases are parallel. The builder of Kirby did not put sham arch-heads inside and black them to prevent their being seen outside.—Ed.

it himself (laughter). On the other hand, on such a work as had been suggested—viz., a work illustrating largely the Renaissance architecture of England in a similar manner to what had been done for German Renaissance—on such a work he might say, in confidence, he *was* engaged (cheers). These things were proverbially long in being brought to a successful issue, but he hoped that next year some parts of the work might appear. Referring to the terrible revivals of Elizabethan architecture that took place early in this century, and which were absolutely to be avoided, he held that what they had to bring to the consideration of their problems was, first of all, common sense, but if they went to Elizabethan times for hints as to how to treat those problems, they would be doing a reasonable thing, and one which might have a good result. They must attack their own problems in their own way, and only study past styles of architecture in order to see how the old people solved the problems of their day. It might not be in the recollection of all present that, two years ago, Professor Aitchison, in the course of a lecture, suggested that the Association should give prizes, not for designing special buildings, but for designs which should embody certain ideas, in the same way that the President had suggested that they should give a prize for a design embodying the idea of dignity. The suggestion seemed to him a most valuable one (applause). Mr. Cresswell had deprecated the slavish symmetry of Elizabethan architecture, but that was one of the things he (the speaker) rather desired to condemn. But, on the other hand, there was a line to be drawn between that and the very Gothic idea that every feature should have its mission, and be exactly proportioned to fulfil that mission. The windows at Kirby he had taken exception to as having faults. They could not do such things now without offending the snsceptibilties of those who know anything about the matter, and what the amateur architect of St. Albans did was, he maintained, very little guide to architects (cheers). Mr. Cresswell had said that the architects of the Renaissance reproduced Classic work, and that was perfectly true of the architects of Italy; but his impression of the English Renaissance architects was not that they reproduced Classic work, but that their work was the recollection of Italian work. He did not advocate a slavish copyism of the details of Elizabethan work, but they could observe *in situ* the effect of all sorts of mouldings, and thence judge the effect of their own. Mr. Shuffrey had referred to the unhappy effect of Burleigh House rising from the ground without terraces, and with that he agreed. He believed, however, that at the time the house was built there were terraces, which had since been destroyed. Another thing mentioned was the time occupied in the erection of the houses themselves. The houses took years and years to build, Wollaton taking eight years, Kirby at least five years, and other houses taking a correspondingly long time, which was another advantage the old architects had as compared with those of the present day. As to the idea of architects assimilating their designs to those of their neighbours, he was afraid the owners would not be likely to agree with that. He wished his shop to look like his own, just as he desired to make it known that he had no connexion with any one of the same name, either over the way or next door (laughter).

Over thirty members of the Association attended Mr. H. Lovegrove's first lecture. The second, on Friday the 23rd inst., will be "Drainage and Sanitary Work," an entirely new paper on that important subject.

ARTICLES OF PUPILAGE.

THE following proposed form of articles of pupilage has been approved in principle by the Council of the Royal Institute of British Architects, and is to be considered by the members at the business meeting to be held on Monday next:—

"**This Indenture**, made the day of 188 , Between (*the Father* [*or Guardian*] *of the Pupil*), of in the County of hereinafter called the Father [or Guardian] of the first part, Son [*or Ward*] of the said hereinafter called the Pupil, of the second part, and of in the County of Architect [and Surveyor], hereinafter called the Principal, of the third part, **Witnesseth** that the said Pupil of his own free will, with the consent of the said (*Father*) Doth bind himself to the said Principal as a Pupil, to learn the Profession or Business of an Architect [and Surveyor], from the day of 18 for the term of years thence next ensuing, And in consideration of the sum of to him the said Principal paid by the said (the receipt of which said sum of £ the said Principal doth hereby acknowledge) He the said Principal doth accept the said Pupil and take him into his service for the said term, And the said doth hereby for himself, his Heirs, Executors and Administrators, and the said Pupil doth hereby for himself covenant with the said Principal that he the said Pupil shall and will during the said term of years loyally execute and perform the lawful instructions and directions of the said Principal, and his secrets keep in all matters relating to the said Profession and other the Business of the said Principal, and will in all respects conform to the Rules of the Office of the said Principal. He shall not nor will do anything that shall cause damage or injury to the said Principal or his goods, nor knowingly suffer the same to be done or attempted by others: He shall not and will not absent himself from the service of the said Principal during the usual office hours of the said Principal without leave first obtained, and in all respects he shall acquit and demean himself honourably, faithfully, and with diligence. And the said Principal doth hereby covenant with the said , his Executors and Administrators, that he the said Principal shall and will according to the best of his skill, power and knowledge during the said term of years teach and instruct or cause to be taught and instructed the said Pupil in the said Profession or Business of an Architect [and Surveyor] as it now is or at any time hereafter during the said term shall be practised by the said Principal: that he shall and will grant to the said Pupil holidays of not less than weeks in the year, at such times as shall be convenient to him the said Principal. And that with the object of enabling the said Pupil to qualify himself for passing the Examinations for Studentship and Associateship of The Royal Institute of British Architects, he the said Principal shall and will allow the said Pupil such absence as he the Principal shall deem reasonable for the purpose of attending Lectures, Classes of Instruction, and the said Examinations. And each of them the said Principal and doth for himself, his Heirs, Executors and Administrators, hereby covenant with the other that in the event of the incapacity from illness or otherwise of the said Principal to carry on his Profession, or of his death, or of the incapacity from illness during months or the death of the Pupil, on or before the day of the said Principal shall and will return to the said the sum of £ and the said shall and will accept such sum in settlement of all claims on the estate of the said Principal in respect of these presents; and in the event of the happening of any of the aforesaid events after the said day of and before the day of the sum of £ shall and will be returned and accepted as aforesaid; but in the event of the happening of any of the aforesaid events at a period subsequent to the last-named date, then no sum shall or will be returnable, nor shall or will any claim be made on the said estate in respect of these presents. And the said Principal, his Heirs, Executors or Administrators, covenant with the said and Pupil that on completion of the said term of service these presents shall be handed over to the said Pupil, with a certificate of such service endorsed thereon.

In Witness whereof the said parties to these presents have hereunto set their hands and seals the day and year first above written.

Signed, Sealed, and Delivered by the above-named..... in the presence of....."

THE CULTS AND MONUMENTS OF ANCIENT ATHENS.

THE second of Miss Harrison's lectures, delivered on November 9 at the South Kensington Museum, dealt with the Temple of the Dioscuri, the cults adjacent to the Propylæa, and the god Pan. The modern town of Athens reaches close up to the north side of the Akropolis, so that as yet the *Anakeion*, or Temple of the Dioscuri, has not been excavated; its site, however, is well known from literary evidence. Pausanias (I. 18) speaks of this temple as *ἀρχαῖον*, a term which with him usually means that a temple was built before the Persian wars. At Athens it would seem that the Dioscuri, or as they were more usually called *ἄνακες*, were always regarded as foreign gods of Spartan origin. A vase from Kamiros (Br. Mus.) and a relief (Louvre) showed them in their character of *ἐφέστιοι ξένοι*—stranger guest-gods—riding down to the sacred banquet provided for them; their "austere daintiness" was, we are told, satisfied with oat-cake and cheese, followed by figs and fallen olives. Early representations of them at Athens were nameless, and it would seem that the *ἄνακες* were at first distinct from the Dioscuri, with whom they were later identified. Probably in their origin they were much humbler—merely a type of human twins, consecrated as something marvellous, and for which gratitude should be shown to the gods. A quaint archaic terra-cotta representing twin figures with high-peaked caps, such as might be given to any children, illustrated this theory.

With regard to the Propylæa, Miss Harrison regretted that she could not speak at length of this splendid building, which the Athenians themselves considered their most glorious work of art. Grand as the Propylæa are, they were intended to be much larger. From an examination of the ground-plan and of the architectural remains, it is clear that Mnesikles, the architect of the building, was compelled to alter his original design. In the case of the projected south hall, it is probable that priestly influence interfered. The new building would have encroached on the neighbouring sacred precinct of Artemis Brauronia. This precinct will, it is hoped, be excavated next year. At present, we have little to connect with it. A beautiful fragment of a cylix represents the goddess Artemis herself; the word *ἀνέθηκε* on the back shows it to have been a votive offering. A still more interesting offering is that of a small stone bear (Akropolis Mus.) probably dedicated by one of the young girls who served the goddess under the name of bears (*ἄρκτοι*, Aristoph. Lys. 645). The two other important cults about the gates were those of Hermes Propylæos and of the Graces. The first most likely had his shrine under the small south portico, the latter had theirs somewhere behind that same portico. It was doubtless in allusion to this separation from the Graces, with whom he was so often associated, that Hermes was nicknamed *ἀμύητος*, "uninitiated." The Greek Graces, or rather *Charites*, must be kept distinct from the Græco-Latin Graces; they were nature-goddesses, givers of "grace and increase," akin to the Christian conception of grace; as such they danced to wake the slumbering earth to bring forth its produce for men. In this capacity they were connected with Hekate, goddess of the lower-world, whence springs this increase, and possibly the type of the triple Hekate may have been suggested by the three Charites linked together for the dance. Hekate was worshipped as *Epipurgidia* near the temple of Wingless Victory (Paus. II. 30); not far, therefore, from the shrine of the Charites. The connexion of the two cults is proved (1) by an inscription of the 2nd Cent. A.D. on one of the front seats of the theatre of Dionysos,—it reads Ἱερέως Χαρίτων | καὶ Ἀρτέμιδος Ἐπιπυργιδίας | πυρφόρου; (2) by a representation of a *Hekateion* with the Charites dancing round it. The relief of the Charites from the Museo Chiaromonti shows them alone. The *Archandros* relief shows them led by Hermes to the cave of Pan. Here Hermes is no longer *ἀμύητος*, but may join with the Charites in the dance. The reliefs do not represent any particular cave, but at Athens, in the north-west cliff of the Akropolis, there was a cave specially consecrated to Pan—that most Greek and most human of gods, whom no one has yet attempted to explain as a sun-myth. The passage of Lucian, where Justice, talking to Hermes on the Akropolis, says:—"Before you go, Hermes, tell me who it is that is coming towards us; he seems to be horned, has a pipe in his hand, and hairy legs," was delightfully illustrated by a statuette of Pan in this primitive aspect. Later the Greeks got tired of Pan, with his goat legs and rustic smile; they made him into a melancholy youth. A fine instance of this later type is the celebrated bust at Munich. In conclusion the lecturer showed by literary evidence how strongly, and yet how differently, Pan had seized on the imagination of the old and the modern world: whether he was thought of as the joyous goat-legged god or as the player on the double reed—the one of Pleasure, the other of Pain.

Proposed Technical Schools for Plymouth.—A meeting of the general committee in connection with the technical schools intended to form Plymouth's Jubilee memorial was held on the 8th inst., to receive a report from the sub-committee, which recommended the adoption of the plans of Mr. Shortridge. This was agreed to by the meeting, and application for a grant will be made to the Science and Art Department. The cost of the building will be from 3,000*l.* to 4,000*l.*

Bristol.—New offices are about to be erected at Bristol for the County Fire and Provident Life Offices. The architect is Mr. E. Henry Edwards, of Bristol.

CLOSE OF THE GLASGOW EXHIBITION.

THIS enterprise closed its public career on Saturday, November 10, with, for the day, an admission-list swollen, nominally, to the imposing total of 117,901, being by far the highest of any day on the record, and making a grand aggregate for the six months of 5,750,000. These figures are not, however, to be accepted anywhere without some considerable explanation and reservation, and probably the place which regards them with the strongest eye of suspicion of all will be found to be Glasgow itself. There, of late weeks especially, the cry has been, by any and every means, to surpass the record, first of Manchester, and, finally, if possible, of the "Colinderies" even. Edinburgh, with its modest 2,500,000, or thereabouts, had long been left far in the rear. The published totals for Manchester and the London Colonial respectively were 4,765,137 and 5,550,749; so that the record of the former has been distanced, nominally, by about 1,000,000, and that of the latter by about 200,000. If the Colonial had netted its full 6,000,000, it was still open to Glasgow to have "beaten" it by dint of extra turnstile exertions on the part of the stall attendants and the record-swelling portion of the season-ticket holders. It is notorious in the neighbourhood that this not very elevated order of emulation has been most diligently afoot for weeks, and certain active, long-limbed season-ticket men brag proudly, if somewhat sillily, of having done their stated dozens of admissions daily, over a considerable period. At the same time it should be mentioned that not a few of the people of the place are heartily ashamed of their city condescending to engage, in any form, in the manufacture of "victory" on the shoddy principle. Even after discounting this, however,—and the rate of discount must be very liberal to put matters on a legitimate footing,—there remains for the Glasgow Exhibition a measure of undeniably substantial success, very much larger than even the most sanguine dared dream of at the commencement. Season tickets were sold, in full, to the value of 43,716*l.*, and up to 9 p.m., the final closing hour last Saturday, the gate-money realised a total of 118,938*l.*, raising the admission summation to 162,654*l.* Revenue from stall-rents, switchback royalties, and other sources must have been very large, and a handsome surplus is looked for, although it may not quite reach the figure which certain misinformed optimists hazard at the present time. Outgoings have been very heavy, and, unfortunately, unlike any mere record of admissions, there are no known means of artificially swelling such a thing as a surplus. Disposal of the surplus, whatever proportions it may ultimately assume, comes in for discussion and decision hereafter, and this is an operation which will certainly be accompanied by no little friction of claim and opinion. A call is meanwhile being raised for the retention of the dome and immediate precincts as a permanency, with the view of utilisation as a people's palace and winter promenade; but advocates of this overlook certain formidable structural and architectural impediments in the way. Decision as to the disposal of the building, and apart altogether from the allocation of the surplus, now rests with the Magistrates and Town Council of the city, to whom the committee have made over all rights, conditionally.

Monday, the 12th, was by Guarantors, Committee, Executive, and Exhibitors devoted to a leave-taking or valedictory ceremonial within the building, the proceedings including addresses by Sir Archibald Campbell, Bart., President of the undertaking, and by Lord Provost Sir James King, with several minor speeches during the progress of a banquet, to which the others were entertained by the associated exhibitors. At one stated point, Sir Archibald Campbell, attended by his official following, led the way towards the grand entrance, and by means of a golden key, presented to him by the Lord Provost (to be afterwards retained by the President as a souvenir) formally locked the gateway thereof, while at the same time pronouncing the Exhibition fully and finally closed.

Proposed Memorial to the late Mr. M. H. Bloxam, F.S.A.—A subscription has been started among members of Rugby School and old Rugbeians to raise a memorial to the late Mr. Matthew Holbeche Bloxam, F.S.A., the well-known antiquary.

SOCIETY OF ENGINEERS.

AT a meeting of the Society of Engineers, held at Westminster Town-hall on the 5th inst., Mr. A. T. Walmisley, President, in the chair, a paper was read on "The Practice of Foundry Work," by Mr. H. Ross-Hooper.

The paper first briefly compared the particular qualities and properties of pig iron, with the view of determining the varieties which are best adapted to the requirements of the different kinds of castings made; and showing how the nature of cast iron depended not only upon the amount of carbon that it contained, but upon the conditions under which that carbon existed. The author then proceeded to illustrate how the failing of portions of a cast-iron structure may be traced to a want of knowledge in the way the lines of crystallisation flow on the cooling of the metal, and mentioning the weak points to be guarded against in the designing of cast-iron work. Moulding, or the production of a hollow mould to receive the metal, was next considered; for to mould melted iron into any required shape or form two things are necessary, (1) a pattern of the article to be produced, (2) a substance which will retain the impressions of the pattern made upon it and resist the violence of the metal when poured therein. To make a pattern a man requires to be thoroughly conversant with the principles of moulding, to so construct it that it may give a minimum of trouble to the moulder; the materials used for pattern-making and the general essential points of this branch being touched upon. The differences between green and dry sand moulding, the requisites of a good loundry sand, and the mode of preparing a mould for a small girder bed-plate, were entered into in detail, noticing those particulars which should be observed in the construction of sand moulding, and showing the uses of cores and the method employed in their formation both large and small.

The author next proceeded to describe the features of loam moulding, illustrating (by means of a working model) the process of constructing a mould for a drum capable of holding 200 feet of one-inch wire rope used in the erection of the Sukkur Bridge, India.

After explaining the operations of chill casting, malleable cast-iron, and the system of moulding known as "Jobson's blocks," whereby sand-moulds of thin, delicate patterns can be made by ordinary labourers, the author mentioned the different modes adapted for casting according to the forms and requirements of the various articles to be produced, and how sound results can only be obtained by a careful attention paid to the feeding of the metal to supply the shrinkage and drawing away which must inevitably occur on the cooling of the metal. The cupola, its construction, and advantages over other types of furnaces, and the manner of charging it, together with the appliances necessary to a foundry in the shape of drying-stoves, cranes, &c., and a "fettling shop" for the ultimate cleaning and dressing of castings, were duly considered.

The author then treated on the examination of cast-iron work and the care that should be observed in all inspection of the same, and finally discussed the tests usually applied and the general strength of cast-iron.

HARDWICK "NEW HALL."

HARDWICK "NEW HALL," of which a small sketch is subjoined, was built between 1580 and 1597 by Elizabeth Shrewsbury, called "Bess of Hardwick," whose initials, "E. S.," are along the balustrade of the towers. This sketch was taken by Mr. A. L. Buxton, from outside the garden-wall, and shows the building as it appears from the gateway of the old Hall.

Illustrations.

DESIGN FOR AN INTERIOR.

THE drawing from which this illustration is taken is by Mr. W. Stirling, and was exhibited in the architectural room at the last Royal Academy exhibition, in which several able designs for ideal work, by the same artist, have found place during the last two or three years.

Mr. Stirling says of it:—"This design being a purely ideal one, and not made with any special view of its being executed, I think it does not require an exact description, but must simply speak for itself. The intention was to make a design which, as far as possible, should not reproduce any of the characteristics peculiar to some one style of the past, but rather those common to all styles, and should be merely suggestive of a treatment or scheme of decoration possible under varying circumstances."

DESIGN FOR AN ELIZABETHAN HOUSE.

THIS design for a large house, by Mr. H. D. Wilkinson, was exhibited under the above title in the Architectural Room at the last Roya. Academy Exhibition.

The design is, the author tells us, one of which the plan was prepared originally in a competition for the Soane Medallion. The house is designed with the idea of being built in a red sandstone, such as Mansfield, with stock brick and red brick facings for the servants' wing.

FELIXSTOWE FREE CHURCH.

THIS church is about to be enlarged in accordance with the designs of Mr. Brightwen Binyon, architect, Ipswich. The present building will accommodate 300 persons, and by the proposed enlargement 251 additional sittings will be obtained. The alterations consist of an increased ground-flour space and the erection of a gallery. The entire front is new, and an extra height of 12 ft. has been added to the building.

CHRIST CHURCH VICARAGE, WESTMINSTER.

THE Vicarage House of Christ Church, Westminster, is situated within the boundary of the churchyard of that parish, nearly opposite the Army and Navy Stores on one side and the Vestry-hall of Westminster on the other. The site being on the north-east of the church, the plan had to be specially arranged so to get as sunny aspects and as pleasant prospects for the rooms as possible; an octagon staircase hall consequently occupies the north-east angle of

the building, and the drawing and dining rooms, each of which has a window at the end as well as a large group of windows at the side, stretch northwards and southwards from it, the kitchens and offices being between them at the rear, and all on the ground-floor. There is no basement, and the house stands on a platform of Portland cement concrete 3 ft. thick, and extending 3 ft. beyond the exterior of the walls. There are two floors of bedrooms and one of attics in the roof above the ground-floor. The house is built of stock brickwork, relaid with red bricks at all the numerous angles and as dressings to the openings, besides which a considerable use has been made of stone in arches, lintels, and sills, but the string-courses and copings are mainly of cast Portland cement concrete. The roofs are covered with Broseley tiles, with terra-cotta ridge-crests and chimney terminals.

The design is by Mr. John P. Seddon, and the building has been erected by Messrs. Holloway Brothers, builders, at a cost of about 3,000*l*. In the background is shown a view, taken from the design made by the same architect, for the completion of the tower and spire of the church of Christ Church, and which is intended shortly to be carried out, and for which a fund has been left to accumulate for some years past.

OLD COTTAGE ARCHITECTURE.—No. VIII.

In the oldest houses, the jambs, sills, and heads of the windows are generally worked on the solid posts, but very commonly these have all been cut away, and larger frames inserted. Probably, in the course of a century, the sills had perished, and something had to be done, and, as usual, it was found simpler, or suited the workman better, to put in a quite new window than to repair the old. Apparently there was also a desire for more light, or, as is often the case, some of the numerous small lights were stopped up, and a few larger substituted.

A very characteristic feature of the earlier sixteenth-century houses is the manner in which nearly all the spaces between the timbers of a room are glazed, this being the practice condemned by Lord Bacon in the well-known passage in which he complains that one could not tell where to be to get out of the light. These long ranges of light were very picturesque in effect, but the result of the window-tax, and also, possibly, the necessity of repair, has caused most of those in cottages to be closed. There are examples of them in this week's illustrations in the "Waggon and Horses" in the Ockford-road and in Hart-lane, Godalming. The lead quarries from the former have disappeared during the last few years.

The older window-frames are always moulded, the earlier as B, and later as C (fig. 1); it is chiefly in the late insertions that one finds the square flat frames, as D, that have been adopted in some modern work, and by a high authority. The windows of this detail are generally of very inferior work and design as to proportion, although in a few instances where they seem original, as in the house at Milford given in a previous number, the proportions are more carefully studied. It is true that in old work one often sees such detail looking well enough, but the moment one comes across a bit of the older and richer detail, one is conscious at once of the vast gap between the two.

While on the subject of detail, I must call attention to the almost invariable rule in the old windows to give the transom an extra projecting moulding, as A (fig. 1). This gives rich-

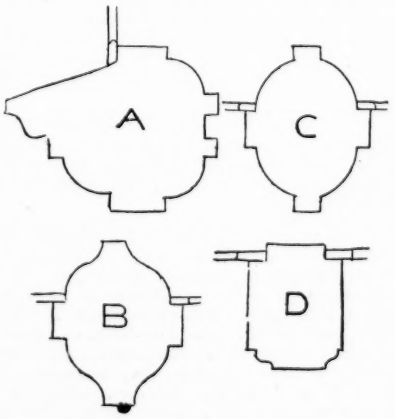


Fig. 1.

ness and strength of appearance, and is very practical, as it serves to throw water clear of the lower part of the window. The upper part of the transom is, and should always be, sloped instead of moulded. Trifling details such as this make an immense difference to the effect. Not only is the water thrown off, but one gets the form of the mouldings clearly marked where scribed on each side on the flat surface.

Another most important point in a transomed window is that the upper light should be higher than its width. The exact proportion must vary with the total length of the window, and there is just one short total length where an exact square may be admissible; otherwise one may take it as an absolute rule that the top light must never be a perfect square or wider than its height.

At Tangley Manor the windows are of rich and good detail, but in other places, as far as one can see, they were simpler, though the best of the old work has, doubtless, often been destroyed, and only that of offices and back-rooms been left.

The earlier outer doors are generally of one of two patterns, both of very practical construction. At Guildford there are remaining one or two very interesting doors of more elaborate character, and Abbott's Hospital is a perfect storehouse of fine doors with semi-circular radiating tops. I give a drawing of a smaller similar door (fig. 2) from an interesting porch that formerly stood by the Town-hall at Godalming. This was taken down a few years ago, and I was lucky enough to secure the old door and some interesting panelling and fittings, which have been fixed at Ote Hall, a fine old timber house in Sussex that I restored for General Godman. This house at Godalming supplied an instance of the manner in which old work may lie concealed. I had myself carefully inspected it some years before with the intention of buying it, and could see nothing but plain plastered walls. When, however, it was pulled down, from behind the lath and plaster appeared excellent oak-panelling and mantelpieces of elaborate character, over which battens had been fixed to carry the laths.

Of the illustrations of this week that of the long building in Church-street is interesting, as it seems to have been built for a row of small tenements, and is not, as is so often the case, a more important house converted to poorer uses. The gable building in High-street was a house of some importance. There was originally a fine coat of arms of stained glass in one of the back windows, which showed that the house belonged to Thomas Hull, who married the

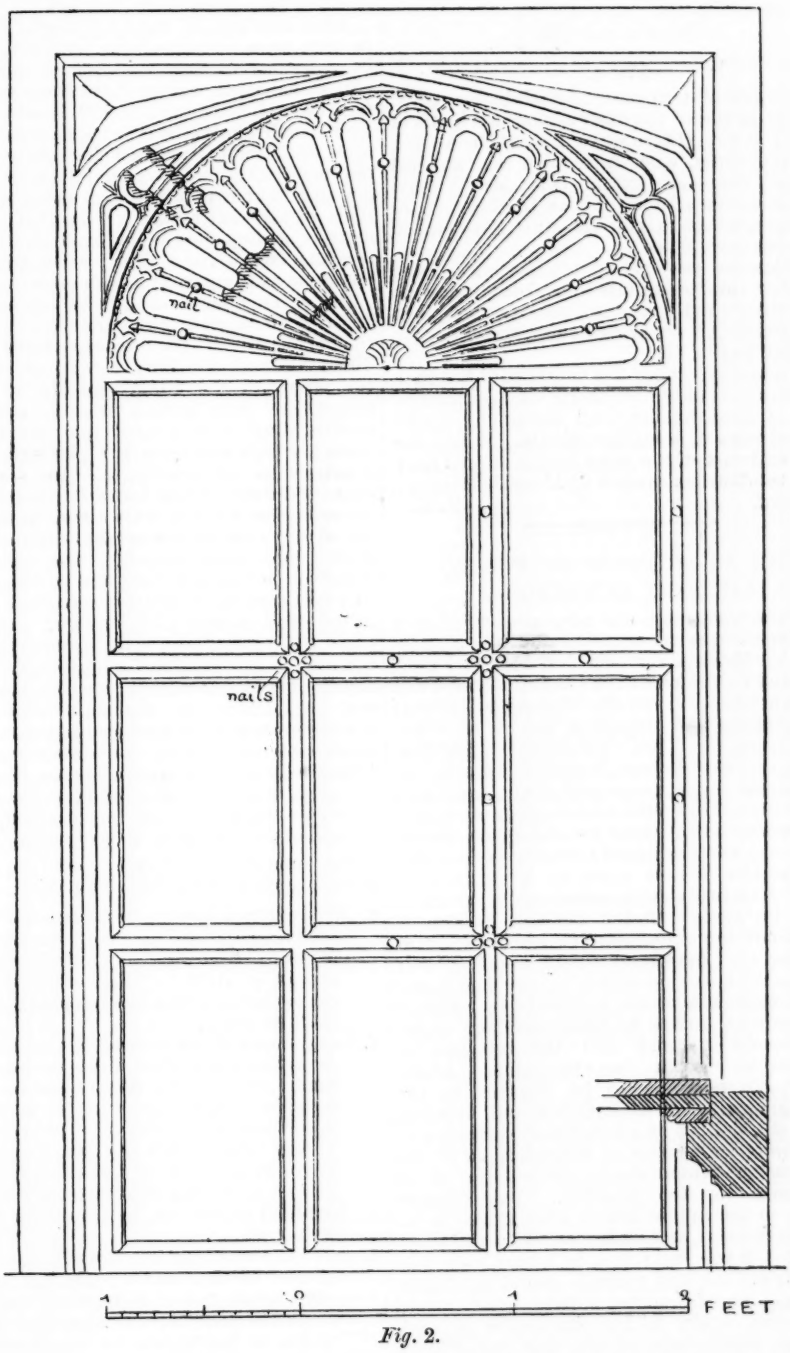


Fig. 2.

heiress of the Westbrook family, the owners of the important house on the other side of the railway. This piece of glass is now in the possession of Mr. Gosling, of Busbridge Hall. The front of the house is plastered over, but the further gable has quite lately been uncovered and repaired. I am told the curved pieces follow the lines of the old timbers, but that other uprights have not been replaced. The pattern of quartering is similar to that at Unsted Farm.

The barge-boards I illustrated in a previous number.

At the side remains the Tudor arch of the old coach-way to the yard. I give herewith the detail of projecting window-sill.

The "White Hart," a most interesting old house, had probably a similar gateway, as the present passage is a story higher than the

original. The ground-floor wall was set back 2 ft. from the line of the first story, the present wall being comparatively modern. The shop-fronts have been further modernised since the date of my sketch. I give a drawing of corbels under second story (fig. 3).

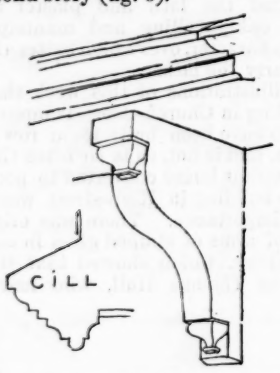


Fig. 3.

The name of that part of Godalming called the Mint is one of the most curious survivals of which I know. There was a mint at Godalming in Saxon times, when the town was a royal vill, and there are extant coins struck here. The name seems to have stuck to this quarter ever since, although coinage must have ceased at a quite early date.

Besides the subjects of my sketches, there are other interesting bits in Godalming not so well suited for illustration, and two very fine seventeenth-century brick houses that I hope to illustrate more fully.

The house adjoining the churchyard has been modernised outside, but inside contains several rooms of good panelling and mantelpieces with coats of arms of the Elliot family. It has also a fine staircase of the same design as that leading to the Warden's rooms at Abbott's Hospital, Guildford. R. N.

THE ASSOCIATION OF PUBLIC SANITARY INSPECTORS.

On the 3rd inst. the new session of this Association was inaugurated by an address given by Mr. Hugh Alexander, who had been re-elected Chairman of the Council. There was a large attendance, and Mr. Alexander delivered an interesting and suggestive lecture on "The Land Laws, and the Operation of Building Leases on the Public Health." Thanks, he said, to the respect, sympathy, and co-operation of the public in the Association's work, and the powerful aid of their President (Mr. Edwin Chadwick), they had good reason to believe that the Association now stood on a platform in public estimation from which great advances might be made. During the new Session of Parliament the promised Bill for the Government of the Metropolis would demand their scrutiny, and the operation of the new Local Government Act would require to be watched in order that justice to their members might be properly secured and the interests of the public health be protected. Attention should continue to be directed to the many anomalies of sanitary law still existing, and to the absence of all statutory definition of the powers and duties of inspectors, or of the qualifications which should be required in all candidates for the position. The greatest danger to the public health arose from the inefficient work of architects, builders, and workmen, and it was held that in future only men properly skilled and trained should be eligible for these appointments. They must return again and again to the discussion of such matters, which were of the first importance, until an examination of candidates should be exacted, based upon knowledge of a more thorough and practical character than that which was considered sufficient for the certificates granted by the Sanitary Institute.

With regard to the operation of the leasehold system and the defective state of the land laws, they went to the very root of sanitary reform, but they were not so well apprehended by the public. If laws to prohibit the pollution of rivers and streams, or of the atmosphere, were just, needful, and of vital importance, it was of not less vital importance to the people that the disposal and use of town lands should be so regulated and restricted by law that the erection of houses unfit for family life should be no longer possible. Unfortunately, the tendency at the present day was to exact terms of the most grinding character in the renewal of leases, and the earnings of the people were thus as effectually confiscated as they could be if a foreign army was in occupation of the country. It had been proved before the Royal Commission on the Housing of the Working Classes that the system of building leases was a great cause of overcrowding, and was conducive to bad building; and that legislation favourable to the acquisition, on equitable terms, of freeholds would conduce greatly to the improvement of the dwellings of the people of this country. For the objection of Lord Salisbury, that the supply of new houses would be checked by a compulsory sale of freeholds, was met by the obvious reply that the demand would regulate supply. The only considerations allowed by owners to have weight under the present system were, first, how many houses could be packed on the land, in order to augment the ground-rents; and, second, how cheaply could the houses be built, in order that speculating builders might thrive.

That numbers of unhappy people from time to time were stricken down with fever, caused by defective drains; that others were racked with rheumatism, arising from damp walls; and that warped, shrunken, and ill-fitted woodwork made conditions ruinous to feeble constitutions; that small rooms, unfitted for family life, and improper offices demoralised the people, were all matters unknown to the gentlemen who draw their ground-rent regularly; but that they were matters calling loudly for legislative action in the interests of the public health, admitted of no doubt on the part of health officers.

In a memorandum to the report of the Royal Commission by Mr. Jesse Collings, the evidence of the representative of the Town Council of Bury, and particularly in the report of Dr. Barry and Mr. P. Gordon-Smith on back-to-back houses, some very striking facts were related upon the tenure of town holdings and upon the particular form of construction of dwellings. In some open country districts it was found impossible to purchase land at a less cost than from 4s. 6d. to 10s. per square yard, or at the rate of from 1,089*l.* to 2,420*l.* per acre, although the agricultural value did not exceed from 30s. to 40s. per acre. The fact that the death-rate was twice as heavy in the front houses as in the back ones, which faced the privies, was most instructive, though not easy to account for. In Halifax, Todmorden, Bradford, Salford, and other towns in Lancashire, and particularly in Yorkshire, that class of houses prevailed to an appalling extent. In Bradford alone during the eleven years from 1876-1886, out of 7,036 new houses certified as fit for habitation, 4,486, or 64 per cent., were back-to-back houses, accommodating an estimated population of 20,000 persons.

The remedial legislation should be directed to the securing of the following ends:—

1. With existent houses, in accordance with the recommendation of the Supplementary Report of the Royal Commissioners, power should be given to leaseholders to acquire, on equitable terms, the freehold interest in their property.
2. Land required for extending the boundaries of a township should be declared town lands, and should be subject, as recommended by the Report of the Royal Commissioners, to a rating of 4 per cent. on its selling value, which the Commissioners believe would induce competition amongst owners, and bring land into the market.
3. That land should not be leased for building purposes.
4. As to the construction of dwellings,—that it should be declared by law that no house shall be allowed to be built on any section or plot of land the frontage and depth of which is inadequate to the provision of rooms sufficiently large for the purposes of family life, and to the provision of a proper back-yard and domestic offices, as follows:—

(*a*) The smallest house should have not less than a 20 ft. frontage, and if two rooms in depth, that such rooms on the ground-floor, measured from front to back, should be at least equal to the measurement from side to side.

(*b*) And such house should be provided with an open yard, equalling in area at least half of the land upon which the house is built.

(*c*) Such house should be supplied with a proper water supply, and a proper closet fitted with proper water supply and apparatus for flushing.

A discussion ensued, in which Mr. Tidman, C.E., Mr. J. Thomas (Hon. Counsel to the Association), and Messrs. Hearne, Fairchild, Dee, Jeffries, and Poulson took part; the proceedings concluding with a cordial vote of thanks to Mr. Alexander for his address.

EXAMINATIONS AT THE SANITARY INSTITUTE.

At an Examination held on November 8 and 9, 74 Candidates presented themselves—15 as Local Surveyors and 59 as Inspectors of Nuisances. The written questions were set to be answered in writing on the 8th, and the Candidates were examined *viva voce* on the 9th.

The following Candidates were certified to be competent, as regards their sanitary knowledge, to discharge the duties of Local Surveyor:—

Charles Bunten.	William Henry Stucke.
William Cooper.	Harold Swan.
A. P. I. Cotterell.	John Henry Swainson.

And the following candidates were certified as competent to discharge the duties of Inspector of Nuisances:—

Albert E. Adams.	James Lee.
B. W. Baillie.	William David Millard.
John Baldock.	Francis Robert Morgan.
Horace B. Benjamin.	John Norrish.
William Thomas Bovey.	Thomas Wickford Potter.
Samuel Buist.	Thomas George Rose.
Arthur Butterworth.	Richard Joseph Sadleir.
Anthony Buxton.	James Allen Short.
W. H. Chaney.	Leo. Sunderland.
John Edwin Clark.	Thomas Thomas.
Alfred Crossley.	William Edward Thomas.
William Medley Drake.	James Thorpe.
Joseph Gilbeart.	Samuel Towlson.
Alexander Grant.	Peter Wood.
Charles B. Jones.	John Wright, jun.
John Kemp.	

INTERNATIONAL EXHIBITION, BRUSSELS:

LIST OF AWARDS TO BRITISH EXHIBITORS.

We extract the following from the official list of awards to exhibitors in the British Empire Section of this Exhibition:—

Group II.—Liberal Arts.

Class 6.—*Decorative Art*—Lynn, John, Larne, silver medal; Cochrane-Patrick, H. G., Beith, N.B., bronze medal.

Class 11.—*Hygiene, Medicine, Surgery, &c.*—Jennings, George, London, diploma of honour; Barstow, Jacob, & Sons, Pontefract, gold medal; Maignen's Filter Co., London, gold medal; Godfrey & Cook, London, silver medal.

Group III.—Industrial Arts.

Class 12.—*Furniture, &c.*—Graham & Biddle, London, diploma of honour; Jennings, George, London, diploma of honour; Forrester & Son, Longton, special prize; Harrington, J., Coventry, special prize; Justice, H. R., London, special prize; Rottman, Strome, & Co., London, special prize; Hembry, B., & Co., London, gold medal; Rottman, Strome, & Co., London, gold medal; Harding, W., silver medal; Mallabone, John, London, silver medal; Mawe & Co., London, silver medal; Murdoch, T., & Son, Edinburgh, silver medal; Murdoch & Son, Edinburgh, silver medal; Rylands & Son, Limited, Manchester, silver medal; Edgington, B., & Co., London, bronze medal.

Class 14.—*Ornamental Metal Work.*—Chubb & Sons, London, gold medal; Harrington, J., Coventry, silver medal.

Class 17.—*Heating and Ventilation.*—Jennings, G., London, silver medal; Justice, H. R., London, silver medal; Marsh, Greenall, & Co., Manchester, diploma; Wilson, C., Leeds, diploma.

Class 18.—*Lighting.*—Stott, J., & Co., Oldham, special prize; Doty Lighting Corporation, Limited, London, gold medal; Fourness Regenerative Lamp Co., Manchester, gold medal; Wenham Co., Limited, London, gold medal; Doty Lighting Corporation, Limited, London, silver medal; Marsh, Greenall Lamp Co., Manchester, diploma; Pike, London, diploma.

Group XI.—Mechanical Industry and Home Work

Class 38.—*Steam-engines and Boilers.*—Shanks & Son, Arbroath, special prize; Ruston, Proctor, & Co., Lincoln, two gold medals; Westinghouse Co., London, gold medal.

Group XIII.—Civil Engineering and Architecture.

Class 40.—*Civil Engineering.*—Chubb & Sons, London, diploma of honour; Brooke, E., & Son, Huddersfield, gold medal; Grayson, Lowood J., Sheffield, gold medal; Pen-yr-Orsedd Co., Limited, Nantlle, gold medal; Silica Fire-brick Co., Sheffield, gold medal; Justice, P. S., London, gold medal; Glenboig Union Fire-clay Co., Glasgow, silver medal; King & Smith, Weedon, silver medal; Skelsey, Geo. Hy., Hull, silver medal; Titancrete Co., Manchester, silver medal; Transparent Wirewove Roofing Co., London, silver medal; Engert & Rolfe, London, bronze medal; Elliott, S., Newbury, bronze medal; Hitchins Fire-proof Plastering Co.,

London, bronze medal; Iron and Steel Fencing Co., Limited, Glasgow, bronze medal.

Class 50.—*Ornamental Buildings.*—Ter Elst Brick Co., London and Duffel, special prize.

FATAL FALL OF A NEW BUILDING: SIX LIVES LOST.

On Friday, the 9th inst., a new building in course of erection at the West-End of London, at the corner of Riding-house-lane, Great Titchfield-street, suddenly collapsed, killing five of the workmen at once, and seriously injuring fifteen or sixteen others. One of these has since died in the hospital. The inquest was opened by Dr. Danford Thomas, the Coroner for Central Middlesex, on Tuesday last, when the principal witness called was

John Clements Richards, general foreman to Messrs. Oldrey & Co., builders, who said (we quote from the *Times* report) that the old buildings at the corner of Titchfield-street and Riding-house-lane were entirely pulled down, and the new buildings were chiefly composed of bricks, stone, and iron. They commenced the work of rebuilding about nine weeks ago. They had thirty-two men employed on the works, which were to be completed within a given time. The work comprised two houses, 53 and 55, Titchfield-street, but that to be reinstated was only one house, and the one that fell was No. 53. They had completed the house as far as construction (*sic*), and they (*sic*) were being carried out under the supervision of an architect, Mr. Miller, and he considered the whole of the work was proceeding very satisfactorily. On Friday morning he was on the works and he noticed nothing dangerous. Iron-work was used in the building, and the materials generally were good and sound. The roof was put on to the house 55 about a quarter to four on Friday afternoon. Witness continued: I was in No. 55, in my office, when a clerk came to speak to me, and said I was wanted. On going out of the door, with the intention of going up to the roof of 53, I heard a rumbling noise and thought that it might be that the large tank on the top scaffolding might have fallen. The bricks and the mortar and all the materials were good; but we had a great deal of wet weather. When the building fell I was at the door of 55. I could not tell the cause of the collapse. The works were being carried out under the supervision of the architect, who acted also as clerk of the works, and they were carried out in accordance with the specifications he had drawn. I could not form any opinion as to the cause of the accident. The District Surveyor visited and inspected the works, I should think, about once a week. I believe I have seen him there seven or eight times. The witness, in a severe cross-examinaton, stated that they had a foundation of 3 ft. of concrete, and it* was bound by girders to the adjacent houses in Riding-house-lane. The mortar was properly mixed with lime and sand. The materials were good. He worked from the architect's specifications and not from any ideas of his own. He did not consider that the mortar was of such an inferior character that on being pressed in the fingers it crumbled like dirt. Mr. Miller, the architect, had a clerk named Freeman. He might have been more frequently there than Mr. Miller himself. The party-wall of the adjacent house in Riding-house-lane was underpinned before the footings of the new buildings were put in.

George Winter, a bricklayer, said he had been working on the fallen premises for a month or six weeks. He understood the character of mortar. That used in this building was good mortar. He neither heard of nor saw anything wrong in the construction of the building. He looked upon the building materials as good.

Other evidence having been given, the Coroner said he should adjourn the inquiry until the 28th inst., and in the meantime have the plan, the specification, and the *débris* of the building practically and professionally examined with a view, if possible, to arrive at the conclusion as as to the real cause of the accident.

Cologne.—Prof. Frentzen, of the Technical High School, at Aix-la-Chapelle, having obtained the first premium in the "Universal" competition for the new great Central Railway-station, at Cologne, has received a year's leave of absence from his professional duties in order to work out the details of his design, which has been finally adopted for immediate execution.

* We presume "it" means the house walling, not the concrete.—Ed.

LINE OF FRONTAGE.

GILBERT *v.* THE WANDSWORTH BOARD OF WORKS.

In this important case, recently heard in the Queen's Bench Division of the High Court of Justice, before Lord Coleridge and Mr. Justice Cave, Mr. R. O. B. Lane appealed, by way of case stated, against an order of the magistrate at Wandsworth directing the demolition of a house, No. 149, Sugden-road, Clapham Common, under section 75 of the Metropolitan Management Act, 25 and 26 Vic., cap. 102, enacting that no building should, without the written consent of the Metropolitan Board of Works, be erected beyond the general line of building in the "street, place, or row" of houses; and that any building erected without such consent might be demolished. It appears from the *Times* report that Sugden-street and Marney-street had been recently laid out on a newly-formed building estate, parallel to each other, and at right-angles to Clapham-road. The Superintending Architect certified on February 13, 1888, as to what was the general line of building in Clapham-road, at which date the house now under discussion was not as yet erected. As now erected it was in line with the rest of the row in Sugden-street and faced that street, and had no means of access except from that street, but projected beyond the line in Clapham-road. The general line of building, as certified, in Clapham-road was at a greater distance than 50 ft. from that road; the house in question was less than 50 ft. from that road. On April 13, after hearing the complaint of the Board of Works, the magistrate ordered the house to be demolished, as being a building in the "street, place, or row" of houses in the road, and projecting beyond the general line of building in the road, and within 50 ft. of the highway. Mr. R. O. B. Lane largely relied in support of his contention upon the case of Barlow and another *v.* The Vestry of Kensington (11, "App. Cases," H.L., 257). In that case the appellant (against an order directing the demolition by the vestry of his house) lived in a house at the corner of the Kensington-road and a new street, called De Vere-gardens. The site of the house, abutting on the eastern side of De Vere-gardens, projected beyond a row of houses on that side of the gardens. The Superintending Architect to the Metropolitan Board of Works certified that the main front of that row of houses in De Vere-gardens was the general line of building in the gardens, but did not decide that that was the general line of buildings either of the row or street in which appellant's house was situate. The House of Lords, reversing the decision of the Court of Appeal, held that no offence under section 75 had been committed, and that there was no jurisdiction for the magistrate's order directing the demolition.

After hearing Mr. Lane at considerable length,

The Court gave judgment, without calling upon Mr. Meadows White, Q.C., who (with Mr. Earle) appeared for the Board of Works.

Lord Coleridge said the case had been ingeniously argued. If appellant's contention was correct, immediate legislation would indeed be at once necessary. Here the Architect had certified to the building line; this building had been found to be within the building line so ascertained. It was not denied that this building was one which, if it faced Clapham-road, would be in Clapham-road; but it was urged that it was, facing as it did to Sugden-road, not in Clapham-road but in Sugden-road; and, therefore, that the building was not an encroachment such as could be ordered to be removed. So to hold would practically nullify and render nugatory all the provisions of legislation upon the matter. It was found as a fact here that the building was within the building line, and also that it was situate in Clapham-road; hence it was within the prohibition of section 75. On an expression in section 13 it was sought to found an argument, which was too subtle, that there was a difference between a finding that "the site of a building" was in such and such a street and a finding that a "building" was in such and such a street. This decision in no way clashed with the recent decision of the House of Lords in the Kensington case, "Barlow *v.* The Vestry of Kensington," by which, even if they were disposed to differ, this Court was bound, and with which he entirely and respectfully concurred. It seemed to be a decision not only sensible but obviously sound. There it was held, as might have been expected, that the house alleged to encroach on the line of De Vere-gardens was not in De Vere-gardens, nor subject to observe the general line of buildings in De Vere-gardens; and, in consequence, that no offence had been committed under Section 75 by the building of the house, and that there was therefore no jurisdiction for a magistrate's order under that Section directing the demolition of the projecting part. The present case differed widely from that. The Architect's certificate was here distinct and final, as laid down in "Spackman *v.* Plumstead Board of Works" (10, "App. Cases," 229), and the magistrate's order, based upon that certificate, unquestionably right. The appeal must therefore be dismissed with costs.

Mr. Justice Cave concurred.

ST. HILDA'S CHURCH, SUNDERLAND.

Sir,—Will you permit me to ask whether any reader or competitor has ever heard the result of the above competition? I have expected to hear something of it in the professional journals, but I have not seen anything. The conditions stated that Mr. Christian should be asked to select the two designs he considered best, and the Committee would select one of these two. All that I have ever heard was when my designs were returned, and that was that mine was not one of the two selected by Mr. Christian. But I think the Committee ought in good faith (if they have not done so) to give both the mottoes and names of the two selected by Mr. Christian, and which has been finally selected, that both Mr. Christian and the competitors may see that the matter has been honourably and fairly conducted. I presume that the competitors could demand so much.

I at least do not feel satisfied to hear that mine was not one of the selected, and *no more.*

A Competitor.

WARMING VILLAGE CHURCHES.

Sir,—In answer to your correspondent [p. 345, *ante*] I would say that Gurney's stoves, though the best of their kind, are not fit for churches; the warmth they give is necessarily localised, and they generally uglify the building with a hideous black smoke-pipe—an eyesore inside the building as well as outside. Get rid of such by all means. To my mind there is but one thoroughly efficient mode of warming a church, and that is by the small-bore hot-water pipes (Bacon's patent). This, like every other warming apparatus of any service, needs an underground chamber and a chimney. There is no reason why people should be so ashamed of a chimney in connexion with a church; as a necessity, it is as justifiable as windows, seats, or any other part of the edifice. It is not a thing, of course, to be pushed into prominent notice on an east or west front, but deserving of careful and honourable treatment. However, in the case under notice, it is to be supposed that an underground chamber cannot be got inside the building; then get it outside. Sink in churchyard and build, like a vault, a chamber, say 7 ft. square and 7 ft. deep, with arched top and chimney-flue, and a flight of steps at one side. From this lay a drain-pipe, with lidded top, to church, to carry the heating-pipes, these being enclosed carefully in a non-conducting envelope. The pipes could be conducted into and along a grating-covered channel in the gangway of church or carried above ground round walls and seats; the pipes, being so small, are not an eyesore. Thus the building is warmed everywhere, and not, as with the stove, in one isolated spot. Of course, the position of the warming-chamber must be controlled by the circumstance that it must be on a spot free from graves. Often the north side of churchyard has no graves; in such case there is no difficulty. The system of small-bore pipe is efficient and inexpensive, the boiler being but the end of pipe made into a coil, and takes up but little space.

Philip E. Masey.

CHURCH-BUILDING NEWS.

Bo'ness.—Bo'ness Parish Church, which has been built recently at a cost of over 6,000*l.*, from the designs of Messrs. Thornton, Shiels, & Thomson, Edinburgh, was opened for public worship on the 14th ult.

Bournemouth.—A new pulpit is about to be erected in the Church of St. Michael, Bournemouth. The design is Early English. The body of the pulpit is octagon on plan, entered by a short flight of six steps from the north transept. It stands on a circular central base-shaft and a base arcading. On five faces of the octagon are panels designed by Mr. W. J. Warren, artist, of Bournemouth, sculptured in the following subjects:—Central panel: "St. Michael," "Jacob's Dream," "Lot's Escape," "Apostles Sent to Preach," "John and the Angel." A carved cornice runs round the top of the pulpit, and a book-desk forms a canopy over the central figure. The pulpit will stand in the same position as the old one, close to the east respond of the north arcade of the nave. The handrail and scroll-work to steps will be of brass and hammered iron, the steps themselves of polished Hopton Wood stone. The interior of the pulpit will have oak floor, linings, and inner capping. The cornice will be of mottled dark Ashburton marble (red and grey); the book-desk, canopy, and body of pulpit of alabaster; the sculptured panels of white alabaster; and the small shafts in arcade of green Devonshire marble. The central base-shaft will be of red Ogwell marble, and the base arcade of bird's-eye dark Ashburton marble (dark grey). A contract has been entered into for the execution of this work with Messrs. A. W. Blackler & Son, of Torquay, for the sum of 250*l.* Mr. Reginald G. Pinder, of Bournemouth, is the architect.

Norton Canes.—Early in the present year the parish church at Norton Canes was destroyed by fire. The old church was insufficient to accommodate the inhabitants of the growing district, and it was decided to enlarge the building, and add other improvements. Messrs. Osborn & Reading, of Birmingham, were instructed to prepare plans, which were approved, and the work has been carried out under their supervision. The contractors were Messrs. Treasure & Son, of Shrewsbury, and the estimated cost of the restoration is 2,300*l.* The style is Late Decorated. A new aisle, transept, organ-chamber, and vestry have been added, and a bapistry formed under the west tower, opening into the nave by an archway. The new aisle arcade consists of four arches, which occupy the position of the outer wall of the old building, and a new outer wall about 10 ft. from these arches extends the whole length of the building. The church is built of Hollington stone. The roofs are open-timbered, and covered with dark red Staffordshire tiles. Messrs. Minton & Co. presented the tiles for lining the walls of the sanctuary, and the chancel floor is also laid with their encaustic tiles. The building is fitted throughout with open pews of pine, and the interior woodwork is stained and varnished. The reredos and lectern are of oak, and the pulpit and fount of Caen stone, all of which have been supplied by Messrs. Jones & Willis, of Birmingham. The windows are glazed with plain cathedral glass, with coloured top-lights. A new organ has also been provided by Messrs. Nicholson & Lord, of Walsall. The church was reopened on the 22nd ult.

STAINED GLASS.

Histon (near Cambridge).—Another Munich stained glass window has now been added to the series already in this church. It consists of three lights, each containing a subject typical of our Redeemer, viz., "The Sacrifice of Abraham," "The Raising of the Brazen Serpent," and "The Ascent of Elijah." The window is by Mayer & Co.

Hounslow.—The Church of St. Stephen, Hounslow, has received an addition to its stained glass of two windows, from the studio of Mr. Taylor, of Berners-street, representing St. Thomas and St. James, studies from Leonardo da Vinci's picture of "The Last Supper."

London.—The Worshipful Company of Wax-Chandlers have enriched their hall, in Gresham-street, with a stained-glass window, from the studio of Mr. Taylor, of Berners-street, containing their arms, granted in the time of Richard III., surrounded by those of members of the court.

Long Crendon.—A five-light east window, with new stonework, has just been placed in St. Mary's parish church, Long Crendon, Thame, Oxon. The subjects represented in the lights are the Nativity, Baptism, Crucifixion, the Angel at the Tomb, and the Ascension; while in the rose above is the Agnus Dei, surrounded by angels. The work has been designed and executed by Messrs. Mayer & Co.

The Student's Column.

ARTIFICIAL STONES.—XX.

Asphaltic and Tar-containing Stones.

THIS division of our subject embraces those stones or compositions in which asphalt, bitumen, pitch, or tar form prominent ingredients, and includes a few patents of interest. Asphalt itself has been known from very early times, and is referred to as bitumen, mineral, or Jew's pitch, by ancient writers. It is supposed to have constituted the "slime" employed instead of mortar in the building of the Tower of Babel, and also to have been used for waterproofing the ark of bulrushes in which the infant Moses was placed. The substance is found in various parts of the East, in Trinidad, Peru, California, and in Europe, where the chief deposits now worked are those of Seyssell, near the Rhone, where about 1,500 tons are obtained annually, and of the Val de Travers, in the Canton of Neufchatel, Switzerland. Asphalt is of complex construction and evidently a product of the decomposition of vegetable matter; its melting point is about that of boiling water, and, when cold, it forms a smooth, hard, somewhat brittle surface. Much of the so-called asphalt used for paving streets, bridges, covering roofs, waterproofing tanks, &c., is not the natural product, but an artificial one composed of asphalt mixed with pitch and gravel or finely-powdered bituminous limestones, such as that found near the Jura Mountains. This "asphaltic mastic," as it is called, laid down hot, becomes firm and hard on cooling.

"Lyons Asphaltum" is composed of asphalt 15 parts by weight, coal-cinders 35 parts, powdered coke 10 parts, lime 130 parts, and fine gravel 160 parts. The asphalt and coal-cinders are mixed in a boiler, heated, and skimmed until the formation of froth has ceased; the powdered coke and lime are then intimately mixed and heated to 575° Fahr., and when quite dry incorporated with the ingredients in the boiler, after which the gravel is added.

The earliest patented application of asphalt is that of Admiral the Earl of Dundonald, who, in 1851, patented the employment of Trinidad asphalt and mineral bitumen of the North American Colonies in the production of artificial stones and other useful objects.

Pym's composition, patented in 1855, was composed of 5 cwt. of asphalt, 5 cwt. of chalk or limestone, 1 lb. of sal ammoniac, and as much coarse sand and grit as will mix freely with the above ingredients when heated in a cauldron; the heated mixture is then cast into the desired forms, and if extra toughness is required cocoa-nut fibre, shavings, or other fibrous materials must be well incorporated.

In Rowcliffe's patent (1855, pat. 2,906), the asphalt is reduced to small particles, and compressed by hydraulic or other pressure into the desired shapes; sand or powdered stone may, if necessary, be added to it before compression. Sheil's stone, patented in 1867, consisted of small stones cemented together with asphalt.

A portion of Fear's specification (1868, pat. 2,759), part of which has been already dealt with, relates to a combination of the oxides of iron and asphalt with lime or cement and sand, with or without gypsum, gravel, &c.

R. Skinner's patent asphalt blocks are prepared as follows:—800. lb of asphalt are placed in an oven and submitted to sufficient heat to drive off water and easily volatilised matters. In a short time the material is capable of being easily powdered, and in this state it is introduced into a large revolving cylinder heated up to 200° Fahr., and then are added 300 lb. each of pulverised slag, coke, and limestone, and about 20 gallons of mineral tar. The tar should be previously boiled to expel water, and thoroughly mixed with the limestone before being added to the other ingredients. After mixing and heating, the product is conducted from the revolving cylinder to a revolving pan and the temperature lowered to 150° Fahr.; in this state it is placed in moulds and subjected to heavy pressure.

Tucker, an American patentee, also compresses mixtures of slag and asphalt into blocks.

Fottrel's patent (1873, pat. 3,086) prepares an artificial stone especially adapted for making drains, pipes, &c., by boiling together a mixture of 13 cwt. of finely-powdered stone, 4 gallons of shale oil, 2 cwt. Trinidad asphalt, and 2 cwt. of bitumenous rock. When thoroughly mixed, the composition is run into suitable moulds.

Some authorities state that it is far better not to melt asphalt with heat, but to use solvents such as carbon bi-sulphide, naphtha, or benzine. These substances evaporate readily and leave a fine hard coating or varnish of asphalt, but it must be borne in mind that the use of such extremely volatile and inflammable solvents involves considerable risk.

Keltman, in his improved process (1884, pat. 12,425), produces a more homogeneous material than is usually obtained. He proceeds as follows:—Crude asphalt is heated with hydrocarbon oils, and impurities are got rid of by deposition; the quantity of oil used is such that, at a temperature of from 17° Cent. to 33° Cent., the bitumen should be capable of being drawn into threads; limestone, ordinary or bituminous, is powdered and mixed with about 40 per cent. of water, forming a thin cream; 15 per cent. of the asphalt or bitumen, at a temperature of 70° Cent., is then added, and the whole well incorporated; finally, the temperature is raised to expel the water, and the liquid mass is cast into blocks, which when cooled are ready for use.

Tar and pitch paving and stone-making compounds are often confounded with those made with asphalt, though in reality they are a totally distinct and inferior class. The following mixtures have been patented:—Gas-tar mixed with mud or slime from the bottom of rivers, canals, &c., finely divided peat, and a little dry sand or gravel formed a compound patented in 1843 by C. Bertram, of Newcastle-on-Tyne. Williams, in 1851, proposed the use of a mixture of rosin, pitch, and sulphur melted together, to which was then added gypsum, lime, sharp sand, gravel, breeze, broken brick, stone, or other hard material and a little dead oil.

W. Hutchinson patented, in 1855, a dark artificial stone made by boiling coal tar until all water is driven off and then adding perfectly dried waste pieces of stone, chalk, or gypsum; the boiling is maintained for some time until the materials are completely saturated, they are then withdrawn, crushed to powder, and compressed into moulds of desired shape while still hot. A lighter coloured stone can be obtained by substituting rosin for tar. Stones produced in this way are said to be impervious to moisture and vermin, and very hard. Provisional protection only was granted in 1861 for a mixture of pitch, lime, and gravel. McDonell's improved concrete, patented in 1868, was a combination of ground stone, chalk, lime, grit, shingle, broken stones, of all sizes and descriptions, with pitch or tar and ground burnt clay.

The Rev. G. H. Forbes, in 1873, prepared a cement for making artificial stones which may be included here, though the finished product is free from tar, being formed by burning together a mixture of tar, pitch, or bitumen with Portland, Roman, or other cement. After grinding, the cement is mixed with water and moulded as required.

A bituminous mortar, or stone-forming material, used in America, especially in the petroleum districts, is made by utilising a kind of pitch, or bitumen, obtained as a by-product in the manufacture of paraffin oil; this is mixed, in a melted state, with a powder composed of one part good slaked lime, and two parts sharp quartz sand.

W. E. Constable's "London Artificial Asphalt" (1886, pat. 3,832) is formed by crushing hard limestone, and heating to about 130° Fahr. to remove moisture; to every ton of this dried material is then added about twelve gallons of distilled tar (free from oil, creosote, and water), and the resulting mixture is stored for at least three months; to this preparation, as a base, lime, sulphuric acid, and bitumen are added to complete the formation of the artificial asphalt.

Books.

Historic Towns. Edited by E. A. FREEMAN and W. HUNT. *Cinque Ports.* By MONTAGU BURROWS. Longmans.

IT is not often that an Oxford Professor can establish a claim to be heard as an authority on naval matters; but the author of this interesting little volume is both a Captain in the Navy and the Professor of Modern History in the University of Oxford. As a diligent antiquary and attractive writer he is already well known, but it may be doubted whether he has ever found so suitable a subject for the employment of his pen as the history of the Five Ports which, long before a National Navy was thought of, maintained the supremacy of England in the Narrow Sea, and defended our coast at its most vulnerable points. It is not easy to realise the fact that five centuries ago, Sandwich, for example, occupied a position scarcely less important than Portsmouth now holds. It was there that the squadron which was to take part in the siege of Calais mustered in 1347—a squadron consisting of 710 ships and 14,151 men. Sandwich itself contributed no less than twenty-two ships and 504 men to the force, and places as insignificant as Rye and Winchelsea sent contingents of no mean character, whilst the quota from Portsmouth numbered only five vessels, and London but twenty-five. We must, however, go much further back than five centuries ago for the origin of the Cinque Ports—Hastings, Sandwich, Dover, Romney, and Hythe. They formed a Confederation, similar in some respects to that of the Hanse Towns, partly for trading and partly for defensive purposes. They were charged with the guardianship of the English shores and the passage to the Continent, and in acknowledgment of these services, which were distinctly feudal, were allowed unrivalled privileges and invested with peculiar honours. The Confederation "has

enjoyed the singular felicity of having taken on the one hand a leading part in establishing the constitutional liberties of England, and, on the other, of having supplied the chief weapon used by its kings in the consolidation of its territory, and the restoration of its sovereignty in the Narrow Seas." Indeed, it may be said with truth that out of the Navy of the Cinque Ports grew the Royal Navy of Great Britain.

Whether the Confederation is to be traced back to Roman times and is to be regarded as the outcome of the fortresses planted by the Romans on the south-eastern coast, or whether it was a Teutonic organisation, we cannot say with positive certainty. This, however, is abundantly clear. The five ports were recognised by Edward the Confessor, and, one and all, derived their charters from him, but with the Conquest their importance was largely augmented and their history may be said to have begun; for one result of the Conquest was to turn the British Channel into an Anglo-Norman arm of the sea. It was the means of communication between those possessions in England and France which were governed by the same monarch, and the service of the Cinque Ports was to keep the line open and protect the trade that was carried on between the divided parts of the same empire. Thus we can readily understand why it was that when Richard I. collected his naval armament for the invasion of Palestine it was not from the Cinque Ports but from the south and west of England and from Anjou that he drew his forces. The Confederation existed for quite different purposes, and formed, in fact, a naval militia — a home squadron charged with defensive duties which the absence of the king rendered more than ever necessary. When, however, the intercourse between England and France changed its character, the duties of the Confederation changed with it. Their ships were then employed for aggressive purposes, and the victories gained by them over the French in the thirteenth century are among the most brilliant in the annals of naval enterprise. Professor Burrows goes so far as to say that the battle won by the Cinque Ports navy, under Hubert de Burgh, in 1218, was, in its result, "not inferior to the success of Trafalgar." It destroyed at once all hopes that Lewis had formed of the English crown, and placed the throne of the youthful Henry III. in a state of security. The important part which the Cinque Ports took in the struggle between Simon de Montfort and the King we have not space to notice; but there is something significant in the extreme leniency with which Edward dealt with them,—and even with Winchelsea (which had long defied him),—when the baronial insurrection had been brought to a close. Edward thoroughly appreciated the value of the help they could give, and spared no pains to draw towards himself their loyal spirit. He was well rewarded. Their fleet did him signal service in his Welsh expeditions. The reduction of the island of Anglesey was principally their work, and the King recognised their faithful service in a new Charter, which confirmed and extended their ancient privileges.

At the end of Edward III.'s reign the decline of the Cinque Ports began. Various circumstances contributed to it, but amongst the most important were certain physical changes which, long resisted, at last proved irresistible. It should be borne in mind that the importance of these littoral towns was largely due to their position. The approach to London in early times was not, as now, round the Forelands and by the Thames' mouth, but by means of the river Wantsum, which, flowing between Reculver and Richborough, made the Isle of Thanet actually insular. The Wantsum by degrees became filled up. Richborough perished, and Sandwich took its place. But Sandwich, in its turn, shared in the same fate.

"The fatal influx of choking sand may be said to have waited upon the growth of London. As long as its two Kentish outposts were of real importance for that growth, the sea was their obedient vassal; but when the great city had risen beyond the need of such help, by the time that Sandwich had proved its superiority over its rival and become the chief rendezvous for Royal fleets, the eastward drift began to produce its ruinous effects. Co-operating with the causes which were acting on the Wantsum, the sand, which was held in suspension by the tides long after they had deposited their burden of shingle, washed more and more into the bay, till in its progress to the east the mouth of the Stour, which had been at Sandwich, was driven mile by mile in the same direction as the sand. The river, helplessly yielding to compulsion, having long reached the limit of endurance, debouches, after a course of nine miles, under the cliffs of Thanet, by Pegwell Bay, and the famous bay of Sandwich has long become one expanse of sand, which cuts off from the sea by some two miles or more of dreary waste, one of the most interesting towns in England."

Of course, these changes were slow in operation, and did not affect all the Ports in equal measure. Winchelsea, for example (which was one of the two ancient towns admitted into the Confederation after the Norman Conquest), lost its proud position through other causes. The old town stood upon an island—a mere strip of sand exposed to the irruption of the sea, and needing constant attention for its sea-walls. It had a fine harbour, grew populous and important, and its inhabitants, perhaps through their constant struggle with the invading sea, were the boldest seamen on the coast. The town gave shelter to Earl Simon, and thus provoked the vengeance of Edward. In spite of its gallantry it could not long resist the greatest general of the age; and then, half-ruined by war and wind and waves, it was entirely swept away in 1287 by a tempest and inundation which changed the course of the river Rother, and with it the whole face of the Romney coast. New Winchelsea, which the king himself built on the higher ground of the neighbouring promontory, met with other enemies. French and Spaniards assailed it. Its walls were left unprotected, and fire on more than one occasion ravaged its streets. The dissolution of the monasteries gave the final blow by destroying the two Religious Houses which still gave it importance. In 1601, Raleigh speaks of the place as "gone to decay," and the tourist of to-day, who delights in its picturesque features, repeats the verdict.

Those who regard with pride and interest the history of England can scarcely do better than visit these Ports, with this hand-book as their companion, and see with their own eyes the spots where history has been made.

Études d'Archéologie et d'Art. Par OLIVIER RAYET, réunies et publiées avec une notice Biographique sur l'auteur par SALOMON REINACH, et illustrées de cinq photogravures et de 112 gravures. Paris: Firmin-Didot et Cie. 1888.

THESE archæological studies will probably be widely read, not only in France, but by the educated public in England. M. Rayet is well known as a cultivated amateur, who has done something to add to the resources of science, and very much to make those resources known to the world at large. The contents of this memorial volume are miscellaneous enough, ranging from a discussion of an unedited fragment of the "Table Iliaque" to an article on the Sculpture of the Salon, 1880. Some of the articles are much too slight to call for reprint, as their interest was of a wholly passing kind; such is the review of Dr. Benndorf's book on Greek vases. Perhaps the most valuable are those which give a popular summary of great systems of excavations, such as that on the excavations at Olympia and Dodona; or, again, those which give some general notion of the contents or specialities of particular museums, such as the article on the Hermitage antiquities and the Trocadero Exhibition.

Hot-Water Supply: A Practical Treatise upon the Fitting of Hot-Water Apparatus for Domestic and General Purposes. By F. DYE. London and New York: E. & F. N. Spon.

THIS little manual, of about eighty pages only, is one of the most useful that have come under our notice for some time. Hot-water circulating systems are now used so much more extensively than was formerly the case, that it is the exception to find a new suburban house of 40*l.* per annum rent without its bath and lavatory with hot-water laid on, and in no part of the building is cheap work and scamping so difficult to discover, so awkward to rectify, and so conducive to dangerous accidents as in the hot-water circulation. In the houses which are erected under professional supervision, it is scarcely too much to say that the architect, in ninety-nine cases out of a hundred, contents himself with specifying a certain sum to be provided for hot-water supply, and he is absolutely dependent upon the men who carry out the work for its success or failure. A careful study of the book under notice would, we believe, prevent this, and would enable an architect to write a full specification of the work required for hot-water supply, and would teach him where to look for evidences of bad workmanship, and it would also give the skilled artisan, who has a practical acquaintance with his work, that knowledge of scientific principles which would teach him why one way of doing a thing is better than another. The various kinds of boilers are first described, and the absolute necessity of periodical cleaning out in London, and the South of England generally, is forcibly insisted upon, as the majority of failures are due to the neglect of this precaution; in fact, we believe that it is the exception for householders to see to this being done. We cannot hold the London water companies altogether free from blame in this respect. They supply the water with all its imperfections, and do nothing to warn those who use it of the risks attending its use. It would be the simplest possible thing for the companies to supply to every house when the water is laid on a card of instructions as to cleaning out boilers and cisterns, and this would call the attention of the householder to what he is at present quite ignorant of. Tanks and cylinders, pipes and cocks, are next described, and the desirability of having large cocks and large waste-pipes for baths is pointed out. A simple and clear explanation of the phenomena of hot-water circulation is followed by a general description of apparatus which deals fully with many practical matters relating to the position of the flow and return pipes and their connexion with the boiler. The cylinder system is said to be of American origin, but it has certainly been in use for many years in the North of England, although near London it is much more rarely used than the tank system. The advantages of the cylinder system seem to be that the cylinder can be placed near the kitchen-range, and kept much warmer than a tank, and chiefly that, as it cannot be emptied when in general use—all draw-offs being taken from above the top of it—there is no fear of the boiler becoming empty should the cold-water supply fail. A very useful chapter is devoted to the cause of explosions, which are, 1, failure of water-supply; 2, frost; 3, stop-cocks; and 4, incrustation; the second being by far the most frequent. The necessity for some kind of safety-valve near the boiler, and the desirability of packing the pipes with some non-conducting material are pointed out. On the question of hot coils, we quite agree with the author that it is much better to use an independent boiler for the coils rather than to connect them with the ordinary circulating system. We can confidently recommend the book, as it is concisely written, and is evidently the work of a man who understands practically what he writes about.

The London County Council, its duties and powers according to the Local Government Act of 1888. By GEORGE LAURENCE GOMME, F.S.A. London: David Nutt. 1888.

THIS small book appears to be one of the best of the guides through the labyrinth of the Local Government Act, of which several have already appeared. It is arranged in the form of a kind of alphabetical dictionary, giving under each word a brief *résumé* of the meaning and effect of the Act as bearing on that subject. It is calculated to save a great deal of trouble to persons wishing to ascertain the working of the Act in regard to any special point.

RECENT PATENTS.

ABSTRACTS OF SPECIFICATIONS.

14,384, Water-closets. R. and W. J. Hocking.

To render waste-water used for flushing less liable to be soiled, and to form a more effective flush, the water is, by this invention, received in a reservoir until a sufficient quantity accumulates, when it is discharged into the closet.

14,543, Incombustible Scenery for Theatres, &c. E. Tepper.

According to this invention, curtains, soffits, and projecting pieces of all kinds are made of an incombustible material, *i.e.*, wire gauze that is impregnated or covered with paint, which completely fills up the holes and renders it opaque.

15,728, Cutting, Grooving, and Bevelling Wood. G. A. Oncken.

A continuous board (not veneer) is, according to this invention, cut from a round or cylindrical log of wood rotating upon its axis by setting a vertical knife, which is continually displaced towards the axis of the rotation of the wood, and also the rotating wood itself, in horizontal oscillations upon different centres, for the purpose of causing a to-and-fro movement of the cutting edge of the knife at the cutting line of the block, thereby producing a better cutting effect. A device for cutting chimes, or grooves and chamfer, is also connected. The machine is a powerful one, provided at the two ends with steam cylinders, distributing gear, cross-head

and connecting-rod, which is applied to the crank pin, and thus actuates the driving-shaft direct.

16,048, Window-sashes, &c. Thos. Wilkins.

In place of balancing the sashes, a mechanical multiplier, to gain extra power for the hand, is used by this inventor. The form preferred is that of the well-known device of a sheaf of pulleys. The sash is suspended from above by two cords, each of them passing over a pulley, keyed or otherwise fixed to a spindle running in bearings. A break actuated by a cord is also affixed. When the sash is required to be opened, the break cord is pulled, the pulling cord is then left free, the operator then pulls the cord until the window is a sufficient height, and then, by simply letting go the break cord, the sash-cord is tightened up.

16,510, Imitating Marbles, &c. B. and W. Oldfield.

According to this invention, the design is drawn upon paper and transferred upon a lithographic stone or by a printing-press. The surface of the material is varnished, so that it is made non-absorbent. The design, traced in ink which is soluble in spirits, is then placed over the material, and the imitation is more complete than the ordinary methods can effect.

17,223, Reflecting Gas-light, &c. J. Cobbe.

A more or less opaque shade or reflector is used by this inventor, in the form of an inverted truncated cone, declination of which varies according to the distance between the normal level of the light and the height of the ceiling. The light is by these equally reflected in a downward direction and agreeably diffused throughout the room.

NEW APPLICATIONS FOR PATENTS.

Nov. 2.—15,806, R. Newell, Ventilating Rooms and Buildings.—15,850, J. Smith, Window-fasteners.—15,857, W. Kinnear, Metallic Ceilings and Cornices.—15,861, B. and W. Kent, Cutting Bricks and Loading on to Barrows.

Nov. 3.—15,879, J. Clayton and C. Tindall, Water-closets. — 15,920, J. Lightbody, Water-cisterns, &c.

Nov. 5.—15,948, B. Giraud and S. Fisher, Latch and Lock Arrangement for Doors.—15,997, A. Boult, Paint.

Nov. 6.—16,004, P. Mugford, Removing or Replacing Tiles in Firegrate Jambs.—16,011, J. Shepherd, Treads for Stairs, Steps, Floors, &c.—16,019, H. Owens, Operating Fanlights, Skylights, &c.—16,035, S. Challoner, Lacquers and Varnishes.—16,045, W. Thomson, Door Knobs and Fixing same to Spindles.—16,053, C. Huelser, Fireproof Device for Walls, Ceilings, &c.

Nov. 7.—16,087, R. Bluck, Bricks, Tiles, Pipes, &c.—16,113, P. Evans, Cement.—16,129, J. Lansard, Electrical Alarms for Doors and Windows.—16,131, A. McKeehnie, Stone-dressing Tool.—16,145, J. and T. Connolly, Moulding-machines.

Nov. 8.—16,155, J. Thornton, Fireplaces.—16,169, F. Abbey and A. Walshaw, Chimney-pot.—16,182, J. Chandler, Sash-fastener.—16,185, A. Smith, Dressing White Lead, &c.—16,203, F. Hawkes, Sash-cords, &c. — 16,209, M. Szabò, Kitchen Ranges.—16,214, J. Phelps, Eaves Gutters of Roofs.

PROVISIONAL SPECIFICATIONS ACCEPTED.

8,506, A. Crane, Greenhouses, Conservatories, &c.—12,596, W. Temple and others, Enamelling Slate, Marble, &c.—12,713, T. Sharples and H. Graham, Windows.—13,040, H. McKibbin, Window Frames or Sashes, &c.—13,163, W. Jones, Wall and Ceiling Coverings and Linings.—13,654, C. Ching, Chimney-breast Ventilator.—13,943, J. Osborne, Sash-fasteners.—13,955, J. Rushton and T. Atkinson, Fastenings, &c., for Windows.—14,167, A. Thomson, Paint or Enamel.—14,168, R. Williams and E. Preston, Automatic Flushing Syphons.—14,187, D. Wilson, Tiles or Slabs for Facing Walls, Stoves, &c.—14,392, A. Noad, Decoration of Ceilings and Cornices.—14,402, E. Edwards, Self-acting Window Sash-fastener.—14,454, B. Talbot, jun., Rain-troughs for Roofs of Buildings.—14,491, W. Sayer, Bricks, Tiles, &c.—14,595, W. Jarvis, Chimney-tops.—14,663, J. Rogers, Water-waste Preventers.—14,734, B. Russell, Air-inlet Ventilator.—14,786, J. Broadhurst, Kiln.—15,178, A. Robinson, Water-waste Preventers.—15,202, L. Shone, Sewer or Drain Flushing-tanks.—15,203, I. Shone, Ventilation of Drains and Sewers.—15,355, D. Richmond, Drain-traps.

COMPLETE SPECIFICATIONS ACCEPTED.

Open to Opposition for Two Months.

14,914, F. Jung, Kiln.—252, W. Green, Hydraulic Lifts.—444, J. Hall, Fire-brick Register-grate Backs.—741, H. Gear, Wood Laths.—1,236, T. Robinson, Feed-motion for Wood-planing Machines.—3,856, T. James and H. Brookes, Window-sashes.—7,027, J. Wolloms, Window-fastenings.—14,029, H. Berry, Dry-earth and other Closets.—14,354, H. J. & G. Edwards, Cowls.

Map of the County of London.—We have received from Mr. Stanford a map showing the County of London according to the Local Government Act. The map embraces the whole of the Metropolitan area which will, on the 1st of April, 1889, become the County of London, showing the boundaries of the Electoral Divisions and the Urban Sanitary Districts.

RECENT SALES OF PROPERTY.

ESTATE EXCHANGE REPORT.

Nov. 6.

By Driver & Co.

Fulham—58 to 66 even, Estcourt-road, 72 years, ground-rent £10. 12s. 6d.	£930
Lee, St. Peter's-avenue—"The Priory," 72 years, ground-rent £30	1,000

By G. H. Masterman & Co.

Lambeth—64, 65, and 66, James street, freehold	960

By Rice Bros.

Bermondsey—27, Blue Anchor-lane, 45 years, ground-rent £3	200
Lower Norwood—45 and 47, Hamilton-road, freehold	580

By Rushworth & Stevens.

Soho—Rupert-street, "The Plough" public-house, freehold	4,800
40a, Rupert-street, freehold	2,020

By Marler & Bennett.

Ealing, Windsor-road—"Pelham Lodge," 80 years, ground-rent £8. 8s.	480
Chelsea—276 and 278, King's-road; and three studios, 20 years, ground-rent £24. 14s. 6d.	1,050
Spitalfields—26, Church-street, freehold	930
3 to 6, St. Andrew-street, freehold	650
Dalston—39 and 41, Albion-road, 56 years, ground-rent £10	710
43, Albion-road, 56 years, no ground-rent	380

By W. B. Hallett.

Hackney—27, Elsdale-street, freehold	680
21 and 23, Elsdale-street; and 1, 2, and 2½, Middlesex-place, freehold	960
Camden Town—214 and 216, Arlington-road, 24 years, ground-rent £10	200
26 and 28, Wellington-street, 23 years, ground-rent £10. 10s.	540
Oakley-square—4 and 5, Crawley-mews, 54 years, ground-rent, £4	280
Holloway—3, Middleton-road, 58 years, ground-rent £2	670

By Debenham, Tewson, & Co.

Cavendish-square—77, Wigmore-street, freehold	3,000

Nov. 7.

By W. W. Jenkinson.

Antigua—The Sugar Estates, known as Montpelier, The Hope, Upper Waldrons, and Upper and Lower Harmans, about 645 acres, with machinery and stock	2,500

By W. A Blakemore.

Old Kent-road—16 to 24, Surrey Buildings, 78 years, ground-rent £47	545

By Farebrother, Ellis, & Co.

Cobham, Surrey, Littleheath-road—Two plots of land, 15a. 3r. 20p., freehold	2,010
Edgware-road—An improved ground-rent of £10. 10s. term 28 years	150
Teddington, Cambridge-road—The residence called "Heathfield," freehold	500

By Blake, Haddock, & Carpenter.

Croydon, Dingwall-road—"Springfield," 79 years, ground-rent £17. 5s	750
Mitcham—The manors of Biggin and Tamworth, with their rights	5,000
Market garden land, 9a. 0r. 14p., freehold and copyhold	1,300
Ground rent of £10, reversion in 28 years	230
Ground rent of £5. 5s., reversion in 34 years	140
Ground rent of £14, reversion in 35 years	360

Nov. 8.

By Bradel & Co.

Worplesdon—"The Firs," and 37a. 1r. 17p., freehold	8,000
Two freehold cottages, and 1a. 2r. 9p.	450

By W. W. Jenkinson.

Bermondsey—110 and 111, Bermondsey-street, 61 years, ground-rent £10	325

By C. C. & T. Moore.

Highbury—10, 12, and 22, Conewood-street, freehold	1,155
Mile End—47 and 49, Russell-street, freehold	705

By Howell, Son, & Bonnin.

South Kensington—11, Nevern-road, 84 years, ground-rent £10	1,300

MEETINGS.

Monday, November 19.

Royal Institute of British Architects.—Business Meeting, for Members only. (1) Mr. Lacy W. Ridge will call attention to the papers entitled (*a*) "Conservation of Ancient Monuments and Remains" and (*b*) "Hints to Workmen engaged on the Repair and Restoration of Ancient Buildings;" to their mode of issue; and to their contents. (2) The Council will submit for the consideration of the Members a proposed form of Articles of Pupilage. 8 p.m.

Tuesday, November 20.

Birmingham Architectural Association.—Mr. H. D. Appleton, on "The Affiliation of Architectural Student Societies."

Manchester Architectural Association.—Mr. J. Corbett on "House Heating Water Fittings." 7.30 p.m.

Glasgow Architectural Association.—Mr. John Honeyman on "Drainage."

Statistical Society.—The President's Inaugural Address will be delivered by Dr. T. Graham Balfour, F.R.S. 8 p.m.

Institution of Civil Engineers.—Discussion on Mr. W. W. Beaumont's paper on "Friction-Brake Dynamometers." 8 p.m.

Wednesday, November 21.

Society of Arts.—The Opening Address of the Session will be delivered by the Duke of Abercorn, C.B., Chairman of the Council. 8 p.m.

British Archæological Association.—(1) Mr. H. Syer Cuming, F.S.A. (Scot.) on "The Relics and Mementos of William and Mary." (2) Mr. J. Stevens on "An Early British Cemetery found at Dummer, Hants." 8 p.m.

Builders' Foremen and Clerks of Works' Institution.—8.30 p.m.

Inventors' Institute.—A Paper will be read on "Minton's Pottery and Ceramic Wares."

Royal Meteorological Society.—Papers by Mr. G. J. Symons, F.R.S., and Mr. R. H. Scott, M.A., F.R.S. 7 p.m.

Thursday, November 22.

Arts and Crafts Exhibition Society.—Mr. T. J. Cobden-Sanderson on "Bookbinding." 8.30 p.m.

Society of Telegraph-Engineers and Electricians.—Mr. H. Edmunds on "A System of Electrical Distribution." 8 p.m.

Society of Antiquaries.—8.30 p.m.

London Institution.—Professor W. E. Ayrton, F.R.S., on "Electrical Transmission of Power." 6 p.m.

London and Middlesex Archæological Society.—(1) Mr. J. Watney, F.S.A., on "The History of the Chapel of St. Thomas of Acon." (2) Mr. E. W. Brabrook, F.S.A., on "The History of the Mercers' Company and its eminent Members." 8 p.m. (Mercers' Hall.)

Miscellanea.

The London County Council. — Mr. Mark H. Judge is a candidate for one of the two seats which are allotted to the Division of North Paddington. He points out that it was as the representative of the ratepayers on the Paddington Vestry that, in January, 1885, he first called attention to the now notorious proceedings of the Metropolitan Board of Works in connexion with the new London Pavilion Music-hall, which ultimately led to the appointment of the Royal Commission. Subsequent to the appointment of the Royal Commission his colleagues elected him as one of the representatives of Paddington on the Board of Works, and this chiefly for the purpose of enabling him to assist the inquiry. The interim report of the Royal Commission, he remarks, vindicates every step that he took in demanding an inquiry into the proceedings of the Board, and fully justifies the action of the Metropolitan Board of Works Inquiry Committee, over which he presided.

Vienna.—The arrangements for heating and lighting the new Burg Theatre are probably the most complete, as they certainly are the most extensive, at present in Europe. The heating is obtained by means of eight boilers, with a pressure of ten atmospheres. The lighting is effected by four engines and eight dynamos, which charge 540 accumulators, each weighing 660 lb. These latter are arranged in three groups, namely, one for the stage, another for the auditorium, and the third for the foyers, passages, vestibules, staircases, &c., with a collective energy of 64,000 candle-power. The auditorium has 1,090 lights, of which 370 are grouped together in the chandelier; the stage has 1,970, the store and dressing-rooms 800, and the rest of the house 1,800, besides fifteen arc lamps for the outside and for special occasions. Double lengths of wire are laid everywhere, as a reserve in case of failure, &c., making a total length of 683½ English miles!

The English Iron Trade.—The English iron market is quieter for crude material, fairly active for finished iron, and brisk for steel. On the whole, there is a steady tendency. Although the demand for pig-iron is quieting down, as the slacker season is approaching, and shipments are falling off, prices generally are fairly well maintained. There has been a decline in the Glasgow warrant market, which has been flat; but Scotch makers' quotations show little change. Middlesbrough pig is somewhat weaker, 34s. 3d. being about the figure for No. 3 G.M.B. In Lancashire, makers are firmer than in the north. Hematites in the north-west are very stiff at the makers' quotation, notwithstanding that the market is not in such a satisfactory position as lately, makers quoting 46s. 6d., or 2s. a ton more than last week. A very fair trade is still done in manufactured iron, and prices are well maintained. Some of the Staffordshire makers having raised their products by 5s. a ton, the Lancashire market is hardening. In the North of England and Scotland, prices are firm. Welsh bars have been raised 2s. 6d. a ton, the minimum price being £5 f.o.b. The business in tin-plates is fairly active, and makers' quotations are unchanged. There is still marked activity in the steel trade, nearly all departments being well employed. Shipbuilders continuing very busy, there is a large call for steel and iron shipbuilding material. Activity is well maintained amongst shipbuilders.—*Iron.*

Harburg.—A new town-hall is to be erected at Harburg, a small town opposite Hamburg, at a cost of some 15,000*l.* The design was obtained from Mr. C. Hehl, of Hanover, in competition among the architects of Berlin and Hanover. We mention this little fact only in order to draw attention to the composition of the jury; it consisted, *not*, "comme chez nous," of town councillors without professional assistance, but of one councillor, three architects, and one builder. This is as it should be.

The London Tramways Company: Further Extensions.—The London Tramways Company have given notice of their intention to apply to Parliament during the next session for powers further to extend their lines in the neighbourhoods of Streatham and Tooting. Last session the company obtained powers for the construction of a line from their terminus at Clapham-common, and through Balham to Trinity-road, Upper Tooting; and they are now applying for powers still further to extend the line in the direction of Lower Tooting. Before proceeding with the extensions which have already received Parliamentary sanction, the widening of a portion of Balham-road is necessary, and the Wandsworth District Board of Works are now taking steps for the acquirement of the property necessary for the widening of the road, the Tramway Company having undertaken to bear the expense. As soon as the widening of the road is completed, the construction of the line will be at once commenced, and it is expected to be ready for traffic to Upper Tooting early in the spring. The extension to Streatham for which the company are applying is practically a revival of their Bill of last session, under which they sought powers for extending their line from Water-lane, Brixton, to Brixton-rise and Streatham. The carriage-way throughout is exceptionally favourable for the laying-down of tramways, being on an average not less than 50 ft. wide. The Bill, although opposed, passed the Committee of the House of Commons; but on coming before the Lords' Committee, it was rejected on the opposition of a number of frontagers, although a petition in its favour bore the signatures of more than three-fourths of the inhabitants and householders of the district.

The International Ironmongers', Iron, and Metal Trades' Exhibition, opened at the Agricultural Hall, Islington, on Monday last, is neither so large in extent nor so comprehensive in character as its long and high-sounding title would lead one to expect. It contains, no doubt, some useful and ingenious appliances conducive to the comfort and safety of the home, but there is not very much in it of special interest to architects and builders in their capacity of constructors. The space on the ground floor of the hall is only partially occupied; many well-known firms of the highest repute and enterprise are absent from the catalogue of exhibitors; and there are other indications that manufacturers and exhibitors have become satiated with these "trade exhibitions." Among things worth inspection by the visitors are the ingenious and compact Bostwick folding shutters and gates (Stand 112), Mr. Samuel Elliott's "Simplex" Metal Weather-bar (Stand 44), Messrs. Ewart & Son's "Lighting Geyser" or bath water-heater (Stand 6), Messrs. J. H. Heathman & Co.'s appliances for fire-prevention and extinction (Stand 153), Messrs. C. Isler & Co.'s tube well-driving apparatus (Stand 68), Messrs. J. Kaye & Son's push-and-pull locks (Stand 56), Mr. C. G. Roberts's improved rain-water separators (Stand 96), the St. Pancras Ironworks Company's stable-fittings (Stand 55), Messrs. Willing & Co.'s enamelled copper letters (Stand 121), and Mr. J. Stannah's lifts and hoists, with special gears. Mr. Stannah also shows his pendulum pump. Many of the appliances here named have been previously described in the *Builder*.

Building Activity in Jerusalem.—Jerusalem, writes a correspondent resident in that city to the *Allgemeine Zeitung*, is steadily increasing in size, building operations being actively carried on, in spite of the circumstance that most of the town is situated on barren rock, and has neither commerce nor industry to boast of. Everywhere and continually new buildings are springing up, whilst new parks, public institutions, and churches are improving formerly desolate spots. New large dwelling-houses are constantly being built by wealthy Jews, but the barrack-like, one-storied appearance of these structures is far from adding to the beauty of the city. The Rothschilds are building a new hospital on the Hill of God's Peace, and close by an Armenian Church is in course of erection. The Russians, too, are busy building,—as, for instance, a consulate, a church, a hospital, and residences for their pilgrims. Close to this hospital, a handsome residence for German pilgrims has just been finished. On the Olive Mountain the Russians have also built a look-out tower, whence a splendid view is obtained of the neighbouring country. Some Greeks are further building cafés and bazaars, and Armenians shops.

The Mayor of West Ham.—The newly-elected Mayor of the Borough (shortly to be the County) of West Ham, is Mr. Alderman Robert L. Curtis, J.P., the senior partner of the firm of R. L. Curtis & Sons, quantity surveyors. It will be in the recollection of many members of the building trade that the new Mayor was master of the Tylers' and Bricklayers' Company during the Jubilee year.

PRICES CURRENT OF MATERIALS.

TIMBER.	£. s. d.	£. s. d.
Greenheart, B.G. ton	6 10 0	7 10 0
Teak, E.I. load	9 0 0	14 0 0
Sequoia, U.S. foot cube	0 2 3	0 3 0
Ash, Canada load	3 10 0	5 0 0
Birch ,,	3 10 0	6 0 0
Elm ,,	4 0 0	5 0 0
Fir, Dantsic, &c.	2 0 0	4 0 0
Oak ,,	2 0 0	4 10 0
Canada	5 10 0	7 0 0
Pine, Canada red	3 5 0	4 0 0
,, yellow	3 10 0	5 10 0
Lath, Dantsic fathom	4 10 0	5 10 0
St. Petersburg	5 0 0	6 10 0
Wainscot, Riga, &c. log	2 15 0	4 5 0
,, Odessa, crown	2 15 0	3 5 0
Deals, Finland, 2nd and 1st...std.100	10 0 0	10 10 0
,, ,, 4th and 3rd	7 0 0	9 10 0
Riga	7 0 0	8 0 0
St. Petersburg, 1st yellow	10 10 0	15 10 0
,, 2nd ,,	9 0 0	10 0 0
,, white	8 0 0	10 10 0
Swedish	8 0 0	16 10 0
White Sea	9 0 0	17 10 0
Canada, Pine, 1st	16 0 0	25 10 0
,, ,, 2nd	11 0 0	17 10 0
,, ,, 3rd, &c.	7 10 0	10 10 0
,, Spruce, 1st	9 0 0	10 0 0
,, ,, 3rd and 2nd	7 0 0	8 10 0
New Brunswick, &c.	6 15 0	8 15 0
Battens, all kinds	5 10 0	12 0 0
Flooring Boards, sq., 1 in., prepared, First	0 11 0	0 14 6
Second	0 8 0	0 10 9
Other qualities	0 5 6	0 7 9

TIMBER (*continued*).	£. s. d.	£. s. d.
Cedar, Cuba foot	0 0 3½	0 0 3½
Honduras, &c.	0 0 3½	0 0 3½
Australian	0 0 2¾	0 0 3
Mahogany, Cuba	0 0 4½	0 0 5½
St. Domingo, cargo average	0 0 4½	0 0 5½
Mexican ,,	0 0 4½	0 0 4½
Tobasco ,,	0 0 4½	0 0 5½
Honduras ,,	0 0 4½	0 0 5½
Box, Turkey ton	5 0 0	12 0 0
Walnut, Italian foot	0 0 4½	0 0 6½
METAL		
Iron—Bar, Welsh, in London...ton	4 17 6	5 0 0
,, ,, at works in Wales ...	4 7 6	4 10 0
,, Staffordshire, in London ...	5 15 0	7 0 0
Copper—		
British, cake and ingot... ton	81 0 0	82 0 0
Best selected	82 0 0	83 0 0
Sheets, strong	86 0 0	88 0 0
Chili, bars	78 10 0	0 0 0
Yellow Metal lb.	0 0 7½	0 0 7½
Lead—		
Pig, Spanish ton	13 10 0	0 0 0
English, common brands	13 15 0	0 0 0
Sheet, English	14 15 0	0 0 0
Spelter—		
Silesian, special ton	18 15 0	18 17 6
Ordinary brands	18 12 6	18 15 0
Tin—		
Straits ton	101 10 0	0 0 0
Australian	101 10 0	0 0 0
English Ingots	104 10 0	0 0 0
Zinc—English sheet ton	22 10 0	23 10 0
OILS.		
Linseed ton	19 2 6	19 7 6
Cocoanut, Cochin	26 10 0	28 0 0
Ceylon	25 15 0	26 0 0
Palm, Lagos	27 0 0	27 10 0
Rapeseed, English pale	30 15 0	0 0 0
,, brown	29 0 0	29 5 0
Cottonseed, refined	23 0 0	0 0 0
Tallow and Oleine	19 0 0	45 0 0
Lubricating, U.S.	5 0 0	6 0 0
,, refined	7 0 0	12 0 0
Turpentine—		
American, in casks cwt.	1 15 3	0 0 0
Tar—		
Stockholm barrel	1 1 6	0 0 0
Archangel	0 11 0	0 11 6

COMPETITIONS, CONTRACTS, & PUBLIC APPOINTMENTS.

Epitome of Advertisements in this Number.

COMPETITION.

Nature of Work.	By whom required.	Premium.	Designs to be delivered.	Page.
Drainage Scheme	Elham R. S. A.	50 Guineas	Nov. 29th	ii.

CONTRACTS.

Nature of Work, or Materials.	By whom required.	Architect, Surveyor, or Engineer.	Tenders to be delivered.	Page.
Broken Blue Guernsey Granite	Chiswick Local Board...	A. Ramsden	Nov. 21st	xiii.
Roadmaking and Paving Works	Hammersmith Vestry...	*Official*	do.	xiii.
Corrugated Iron Sheds	Mile End Vestry	J. M. Knight	do.	xi.
York Paving	do.	do.	do.	xi.
Taking up and Re-laying Carriageway	Clerkenwell Vestry	*Official*	Nov. 22nd	xii.
Making-up Roads	Beckenham Local Bd.	G. B. Carlton	Nov. 26th	ii.
Repairing, Painting, &c., Street Lamps	Fulham Vestry	J. P. Norrington	Nov. 27th	xi.
Dust Cart	Lewisham Bd. of Wks.	*Official*	do.	xiii.
Guernsey Granite Spalls	do.	do.	do.	xiii.
Making-up and Paving Road	St. Mary (Batt.) Vestry	J. T. Pilditch	do.	xi.
Jobbing Works	Greenwich Brd. of Wrks	*Official*	Nov. 28th	xiii.
Wood Pavement	Fulham Vestry	J. P. Norrington	do.	xi.
Building Married Quarters, Aldershot	War Department	*Official*	do.	ii.
Refuse Destructor, &c.	Hastings Corporation	P. H. Palmer	Dec. 1st	xiii.
Water Mains, Hydrants, Sluices, &c.	Mansfield U.R.S.A.	G. Hodson	Dec. 5th	xiii.
Ordinary Works, Repairs, Liverpool	Com. of H.M. Works	*Official*	do.	ii.
Pumping Engine and Boiler	West Ham Corporation	Lewis Angell	Dec. 11th	ii.
Institute and Public Hall, nr. Slough Station		H. A. Cheers	Dec. 13th	ii.
Wood Paving	Met. Board of Works...	*Official*	Dec. 14th	xi.
Footway, &c., under Thames, Blackwall	do.	do.	Dec. 21st	ii.
Cheap Food Depot, Edgware-road, W.	Salvation Army	J. W. Dunford	Not stated.	xiii.

PUBLIC APPOINTMENT.

Nature of Appointment.	By whom Advertised.	Salary.	Applications to be in.	Page.
Surveyor	Worshipful Co. of Tallow Chandlers	Not stated	Dec. 5th	xvi.

TENDERS.

[Communications for insertion under this heading must reach us *not later than* 12 *Noon on Thursdays.*]

BRIXTON.—For building club-room and offices for the Cornwall-road Conservative Club, Brixton. Mr. R. A. Lewcock, 88, Bishopsgate-street, and Mr. F. J. Grierson, joint architects:—

Spencer & Co.	£590 0 0
Ivory	580 0 0
Hollingsworth	530 0 0
Stephenson	520 0 0
Palmer	515 0 0
Bawden	455 0 0
Smart	445 0 0

EDENBRIDGE (Kent).—For additions and alterations to "Rusholme," Crockham Hill, near Edenbridge, for Mr. C. Ed. Melchers. Mr. Arthur Ardron, architect, 6, Poultry, E.C.:—

J. Deadman (accepted)	£475 10 0

HORNSEY.—For heating the Isolation Hospital, for the Hornsey Local Board. Mr. T. de Courcy Meade, Engineer and Surveyor:—

George Jennings, Stangate, Lambeth *	£380 0 0

* Accepted.

[Seventeen tenders received. No decision has yet been arrived at with regard to the tenders for heating the Board's Offices.]

LONDON.—For extension of a warehouse, at Brook's Wharf, High Timber-street, Upper Thames-street, E.C., for Mr. Robt. Warren. Mr. Fredk. Todd, architect:—

Higgs & Hill	£4,740 0 0
Mowlem	4,230 0 0
Adcock	3,999 0 0
Holland & Hannen	3,912 0 0
Longley	3,890 0 0
Woodward	3,783 0 0
Spencer	3,580 0 0
Bywaters	3,483 0 0
J. & J. Greenwood	3,444 0 0

LONDON.—For two houses and shops, High-street, Camden Town, London, for Mr. D. Codner. Mr. E. G. Salter, 156, Ossulston-street, N.W., architect. Quantities by Messrs. Brunsden & Henderson, 3, Barbican, E.C.:—

Richardson Bros.	£2,748 0 0
Scrivener & Co.	2,678 0 0
Ward & Lamble	2,675 0 0
Wall Brothers	2,649 0 0
Gould & Brand	2,463 0 0
E. Toms	2,439 0 0
S. R. Lamble	2,327 0 0
James Steed (accepted)	2,229 0 0

LONDON.—For alterations and additions to the "Fulham Bridge Hotel," Brompton-road, Kensington, for Mr. E. Towerzey. Mr. H. I. Newton, architect, 17, Queen Anne's-gate, Westminster, S.W. Quantities by the architect:—

S. Godden, Bryanston-square	£2,859	0	0
S. R. Lamble, Kentish-town	2,827	0	0
H. & E. Lea, Regent-street	2,782	0	0
Kirk & Randall, Woolwich	2,674	0	0
F. Mark, Edgware-road	2,546	0	0
J. Walker, Poplar	2,387	0	0
Jackson & Todd, Hackney	2,373	0	0
Smith, Son, & Fletcher, Belgravia	2,372	0	0
Burman & Sons, Kennington Park	2,355	0	0
J. Beale, Westminster (accepted)	2,085	0	0

LONDON.—For decorative repairs to St. Stephen's Church, Canonbury, for the vicar and churchwardens. Mr. Arthur Andron, architect, 6, Poultry, E.C.:—

J. McCormick & Sons (accepted)	£204	0	0

LONDON.—For alterations, repairs, and additions to 11 and 27, Queen's-gardens, W. Mr. W. Jacomb Gibbon, architect, 36, Great James-street, Bedford-row, W.C.:—

T. L. Green	£949	0	0
Messrs. Macfarlane	942	0	0
E. Z. Nunn	909	0	0
W. B. Head & Son	893	0	0
W. Gibbon & Son (accepted)	835	0	0

LONDON.—For alterations and repairs to the houses mentioned below. Mr. W. Jacomb Gibbon, architect, 36, Great James-street, Bedford-row:—

No. 8, Kensington-gardens-square.

T. L. Green	£497	0	0
Messrs. Macfarlane	449	0	0
E. Z Nunn	392	0	0
W. B. Head & Son	386	0	0
W. Gibbin & Son (accepted)	374	10	0

No. 17, Devonshire-terrace.

T. L. Green	£235	0	0
Messrs. Macfarlane	187	0	0
W. Gibbin & Son	164	10	0
W. B. Head & Son (accepted)	164	0	0
E. Z. Nunn (withdrawn)	118	0	0

No. 74, Lancaster-gate.

E. Z. Nunn	£1,248	10	0
W. Gibbin & Son	949	10	0
T. L. Green	818	0	0
Messrs. Macfarlane	789	0	0

No. 2, Craven-terrace.

T. L. Green	£175	0	0
W. B. Head & Son	172	0	0
W. Gibbin & Son	169	10	0
Messrs. Macfarlane	165	0	0
E. Z. Nunn (accepted)	134	0	0

NORWICH.—For erecting the City Chambers, Prince of Wales-road, Norwich. Mr. Edw. Preston Willins, architect. Quantities by Mr. F. W. Skipper:—

Holmes & Barnard	£2,740	0	0
Wilkin & Wilkins	2,556	0	0
Downing & Sons	2,550	0	0
Wegg	2,460	0	0
Hawes	2,350	0	0
Lacey	2,275	0	0
J. S. Smith	2,275	0	0
Youngs	2,175	0	0
Bennett (accepted)	2,048	0	0

LONDON.—For the erection of engineers' and smiths' shop at 47, Cow Cross-street, E.C., for Mr. James Lee. Mr. John Ross, surveyor, 40, Exmouth-street, W.C.:—

Wall Bros. (accepted)	£449	0	0
Howard	444	0	0
Beasley	383	0	0

LONDON.—For alterations, general repairs, and decorations at No. 8, Ulster-terrace, Regent's-park, for Mr. Sidney Davies. Mr. W. F. Fowell, architect:—

Bywaters	£659	0	0
Laing & Son	527	0	0
Foxley, George, King-street, Regent-street (accepted)	513	0	0

LOUGHBOROUGH.—For new Salvation Army Barracks for 900 persons at Loughborough, for the Salvation Army. Mr. G. G. Wallace, architect:—

Weale & Co., Ludlow	£875	0	0
A. Faulks, Loughborough	830	0	0
W. Corah, Loughborough	794	0	0
T. Barker, Loughborough	789	0	0
A. & S. Main, Loughborough	785	0	0
E. Jarvis, Banbury	779	0	0
G. Haywood & Son,* Bedford	708	0	0

* Accepted.

MORTLAKE.—For the erection of a hospital and mortuary, for the Rural Sanitary Authority of the Richmond Union. Mr. E. Maynard, architect, Richmond. Quantities by the architect:—

Hill	£5,105	13	0
Neil	4,658	0	0
Lansdown & Co.	4,596	0	0
Perry & Co.	4,492	0	0
Judd	4,372	0	0
Knight	4,287	0	0
Nightingale	4,273	0	0
Higgs	4,200	0	0
Sweet & Loder	4,196	0	0
Brass & Co.	4,182	0	0
Hunt	4,039	0	0
Sale	3,986	0	0
Cox	3,961	0	0
Lillywhite	3,950	0	0
Hickinbotham	3,920	0	0
Bissett	3,896	0	0
Brickell	3,866	0	0
Scharien (accepted)	3,852	0	0
Taylor	3,594	0	0
Bax	3,474	0	0

SOUTHWARK.—For providing new glazed partition in the infants' department of the Alexis-street school, for providing additional lighting, and removing and refixing existing partition, for the School Board for London. Mr. T. J. Bailey, architect:—

G. Parker	£148	0	0
J. Bullers	135	10	0
Norris & Luke	134	0	0
H. L. Holloway	125	0	0
Davis Bros.	120	0	0
H. H. Hollingsworth	112	0	0
G. B. Ash	110	0	0
G. Barker*	99	0	0

* Recommended by the Works Committee for acceptance.

UCKFIELD.—For alteration and restoration of the Parish Church, Uckfield, Sussex. Mr. Harry Scarlett, architect, Uckfield:—

Cheesman & Son, Uckfield	£1,740	0	0
Peckham Bros., Uckfield	1,542	0	0
W. W. Smith, Worthing	1,419	0	0
Hy. Card & Son, Lewes	1,412	0	0
P. Peters, Horsham	1,285	0	0
W. H. Canty, Tun. Wells (accepted)	1,177	10	0

WINCHESTER.—For new Salvation Army Barracks at Winchester, as per designs A and B (each to seat 800 people). Mr. G. G. Wallace, architect:—

Plan A.

G. Marsh, Winchester	£980	0	0
A. Smither, Winchester	944	14	0
W. Shearman, Winchester	930	0	0
E. D. V. Buckingham, Winchester	887	18	6
Haywood & Son, Bedford	765	0	0
Edwin Jarvis, Banbury	747	0	0

Plan B.

W. Shearman, Winchester	£1,250	0	0
J. W. Jacobs, Winchester	1,175	0	0
G. Marsh, Winchester	1,028	0	0
E. D. V. Buckingham, Winchester	964	0	0
A. Smither, Winchester	943	13	0
Weale & Co., Ludlow	900	0	0
Haywood & Son, Bedford	745	0	0
Edwin Jarvis, Banbury (accepted)	730	0	0

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C. P. P.—W. S. (we cannot print your communication, but have forwarded it to the writer of the letter. Your signature, however, is quite illegible to us, and will probably be equally so to him).—H. D. (shall have attention).—F. N. L. (it is useless to make such a suggestion, as it is contrary to the interests of the trade to adopt it. A wealthy firm will always endeavour to outdo others in the sumptuous style of its catalogues; it is one form of advertising).—J. W. (should have sent amount of the accepted Tender).

All statements of facts, lists of tenders, &c., must be accompanied by the name and address of the sender, not necessarily for publication.

We are compelled to decline pointing out books and giving addresses.

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We cannot undertake to return rejected communications.

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WILLIAM WHITELEY, Westbourne Grove,
London, Oct. 12th, 1887.

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The recent fire at my establishment in my opinion subjected them to the greatest possible test, and through all, they proved invulnerable.

The contents of both Strong Rooms and Safes were entirely preserved, although the fire was of such intense destructive force.

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(*Signed*) WILLIAM WHITELEY.

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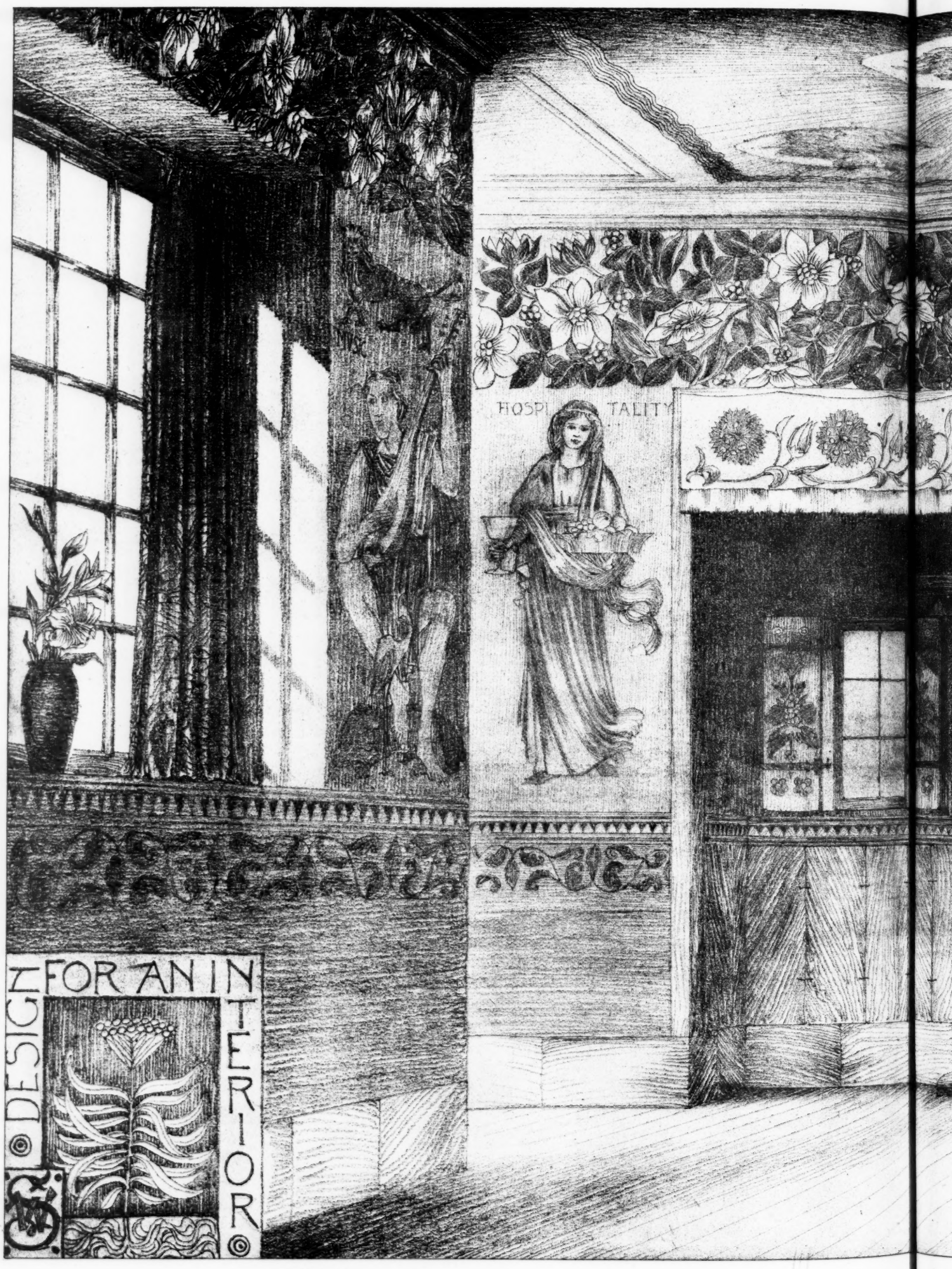
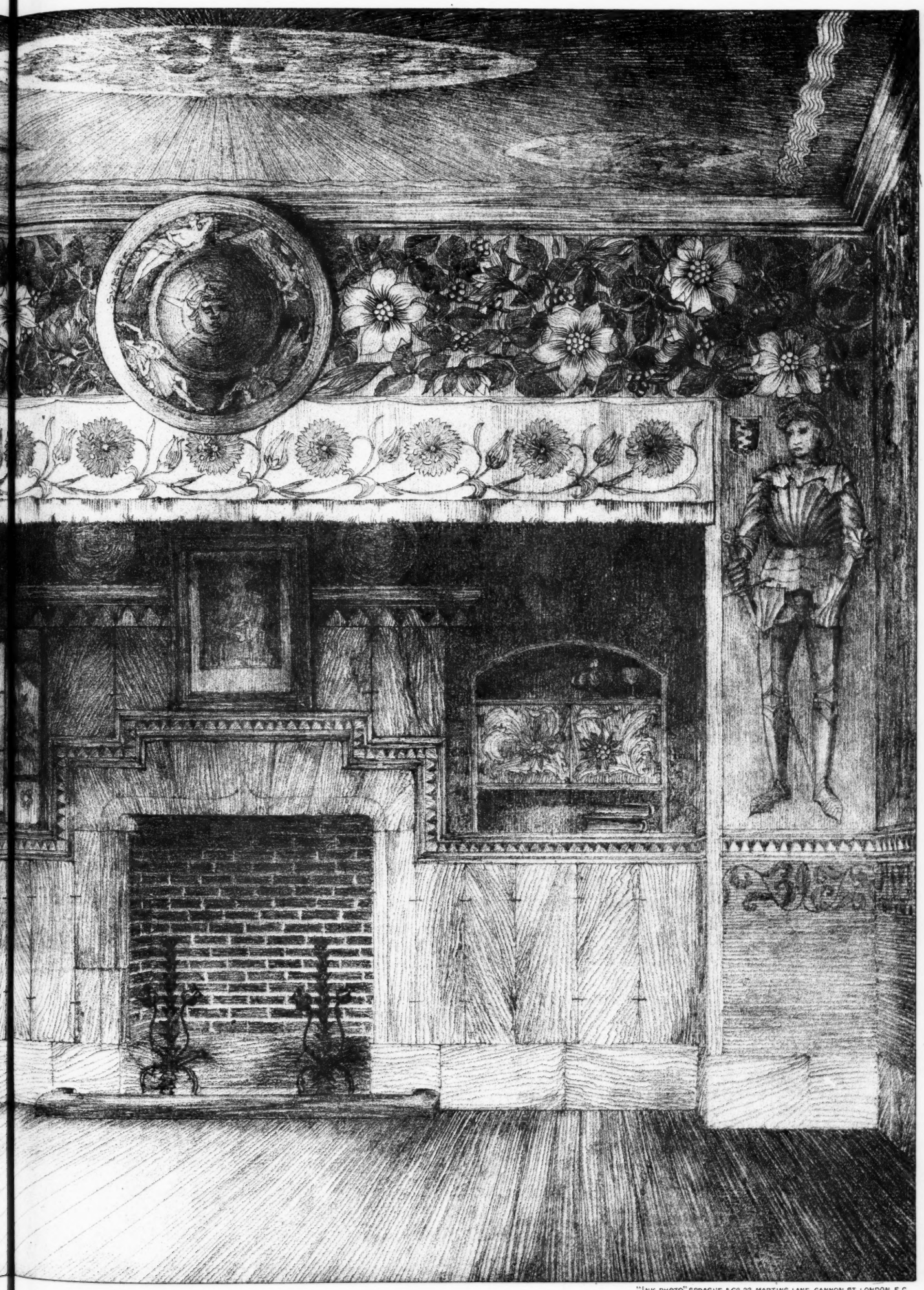


DESIGN FOR AN INTERIOR.—By



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R.—By Mr. W. Stirling.

AN
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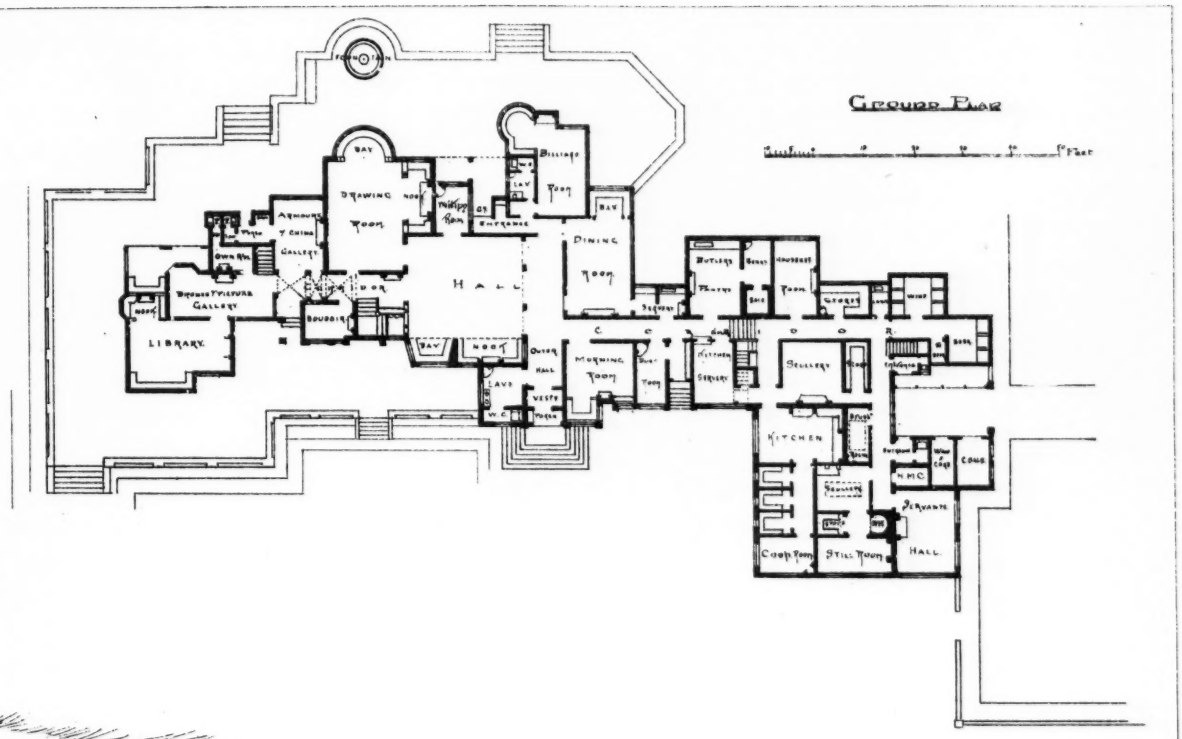
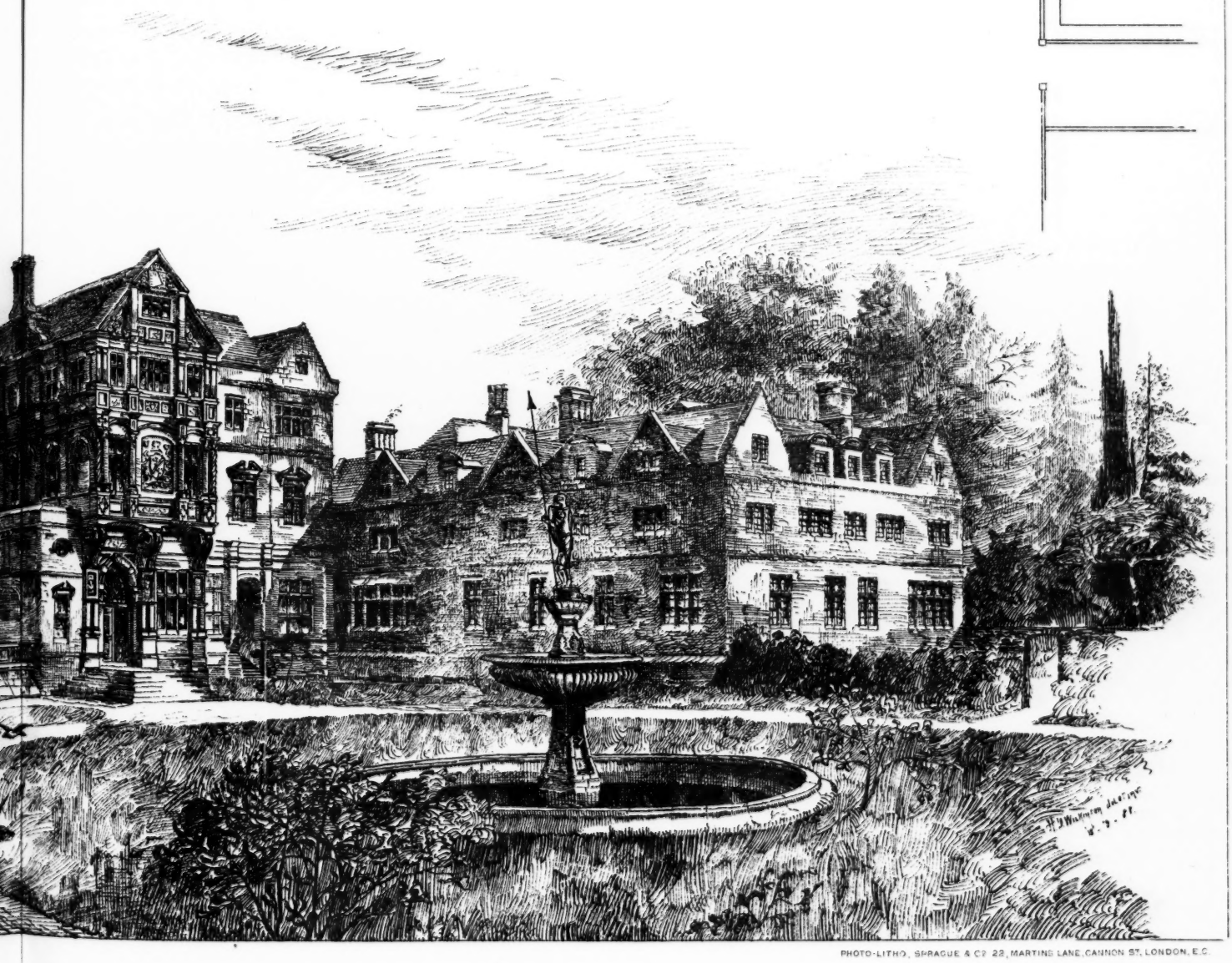
By
H. D. Wilkinson, Archt.





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Design for Enlargement of the EVANGELICAL FREE CHURCH Felixstow

Brightwen Binyon F.S.A. Architect.

E. Thos. Johns del

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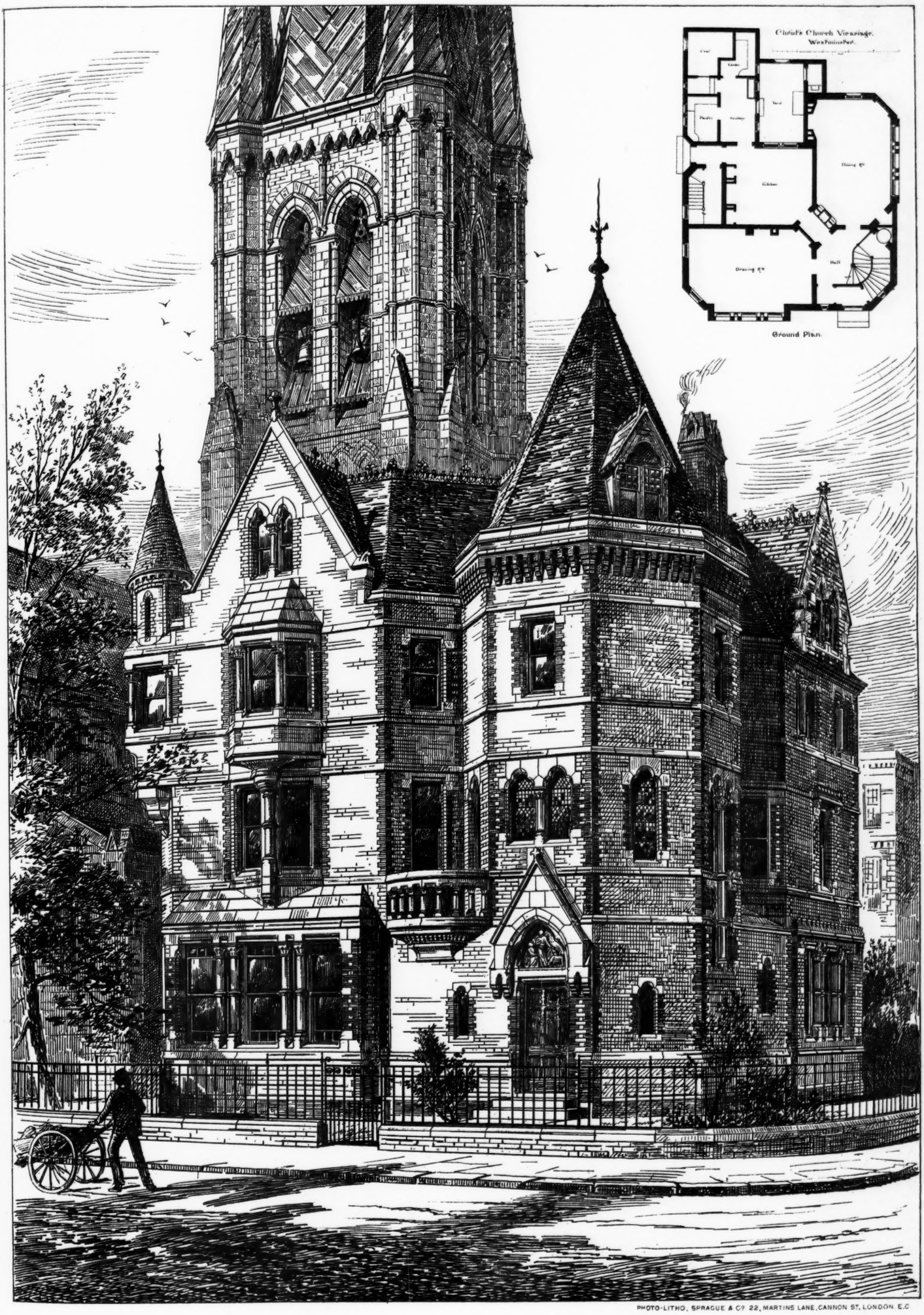

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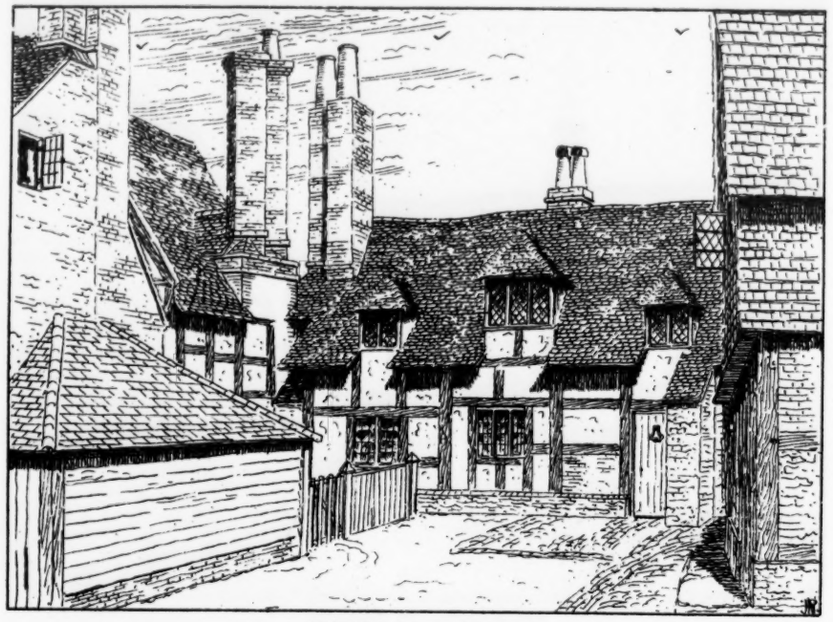
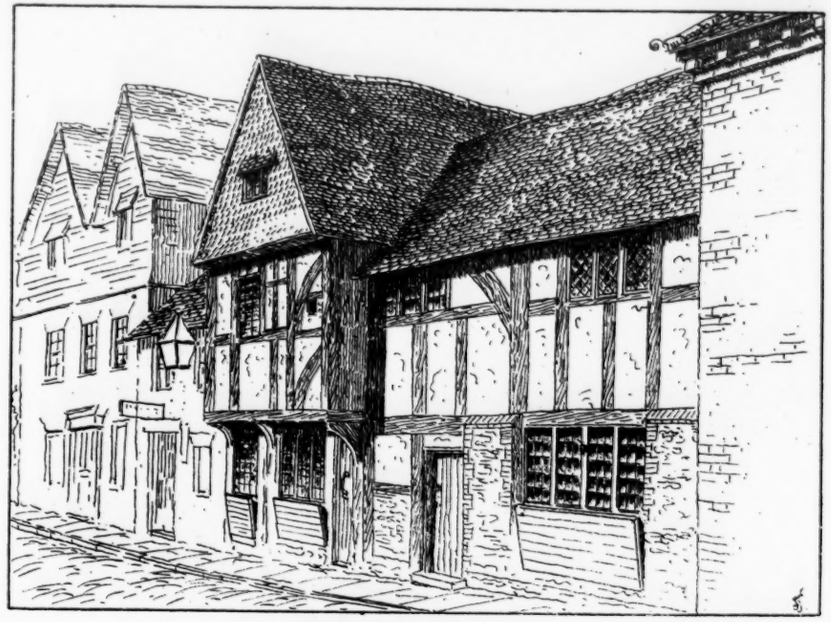
CHRIST CHURCH VICARAGE, WESTMINSTER.—Mr. J. P. Seddon, F.R.I.B.A., Architect.



WHARF ST GODALMING.



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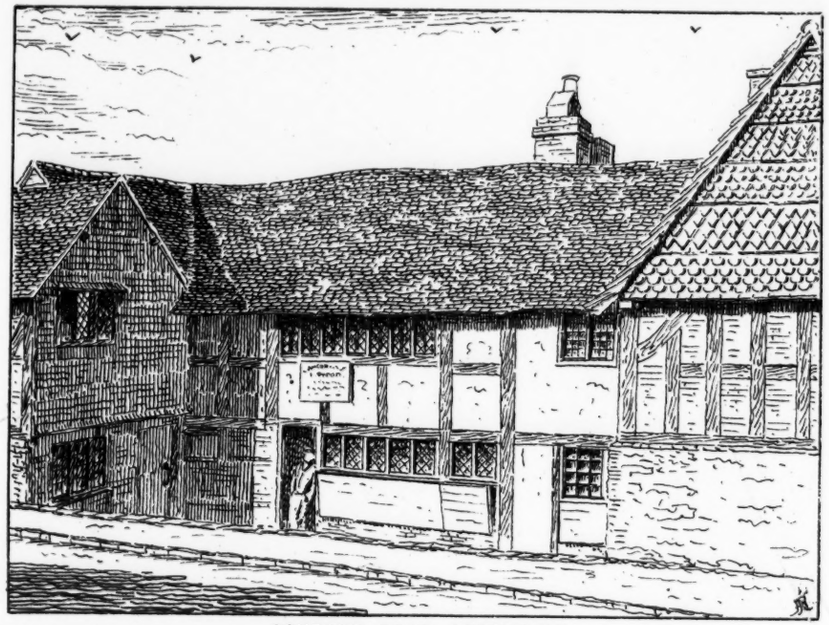
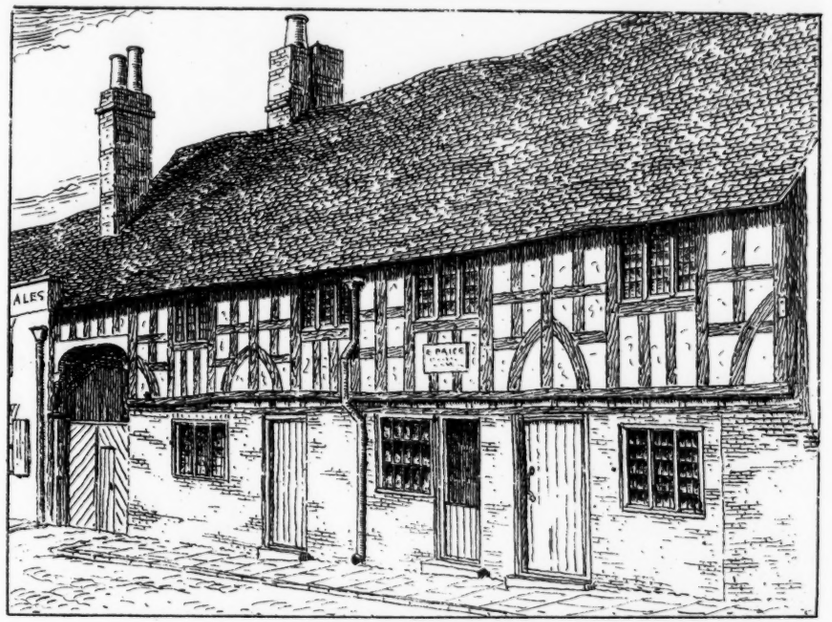


OCKFORD ROAD, GODALMING.



CHURCH ST GODALMING.

OLD COTTAGE ARCHITECTURE.—From Sketches by Mr. Ralph Nevill, F.S.A.

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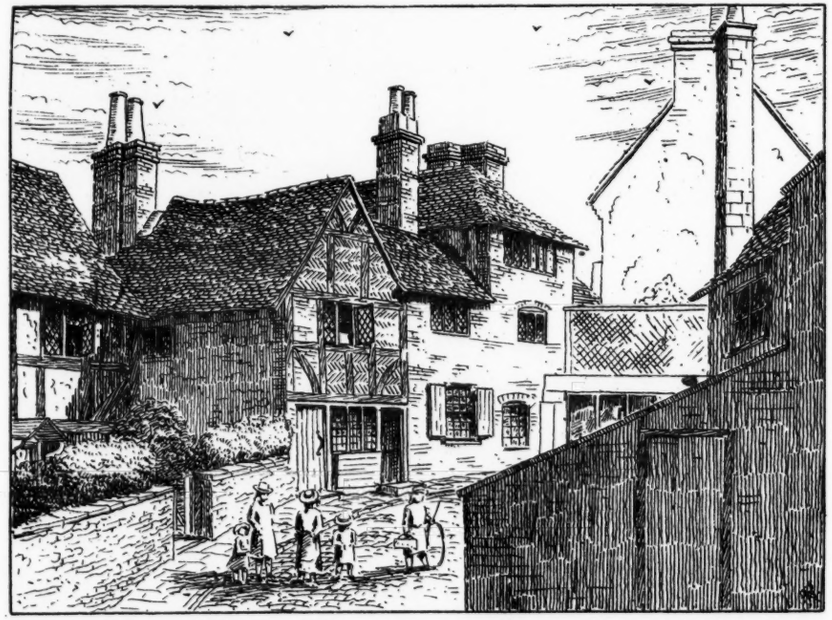
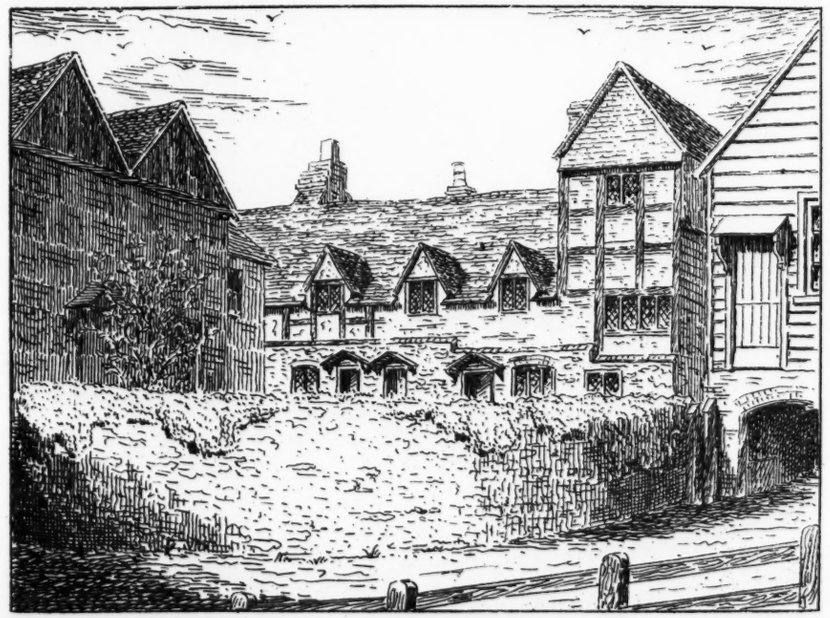
THE BUILDER, NOVEMBER 17, 1888.



HART LANE, GODALMING.

HIGH ST GODALMING.



THE MINT, GODALMING.

THE WHITE HART, GODALMING.

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OLD COTTAGE ARCHITECTURE.—From Sketches by Mr. Ralph Nevill, F.S.A.